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LIGHT ⁂ HEAT ⁂ POWER ⁂ BYE-PRODUCTS

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Editorial Notes.

Interests of the Gas Companies.

THE affairs of the industry as a whole are zealously guarded by the National Gas Council, whose ability to perform the task allotted to them is unquestioned; and the latter remark applies with equal force to another organization whose duty it is to look after the particular interests of gas companies. Each year, in perusing the proceedings at the annual meetings of the Gas Companies' Protection Association, one finds evidence of the useful work accomplished by this businesslike body. The forceful utterances of the late Mr. H. E. Jones, M.Inst.C.E., as Chairman were followed by the not less effective addresses of Dr. Charles Carpenter, C.B.E., in the same position. A year ago, Sir Fortescue Flannery, Bart., retired from the Presidency of the Association, and he was succeeded by Dr. Carpenter, who also retained the position of Chairman of the Committee. In consequence of indisposition, however, Dr. Carpenter was unfortunately unable to be present at last Friday's meeting; and his absence was deeply regretted by members of the Association, who have learned to place the highest possible value upon his guidance. Now, we understand, Dr. Carpenter, while remaining President, has expressed a desire to retire from the Chairmanship; and the Committee have felt compelled reluctantly to respect this wish. They would still less readily have done so, had it been a question of the total severance of the helpful relations which have hitherto subsisted between Dr. Carpenter and the Association. But this is not to be the case. In the rôle of President, Dr. Carpenter will be able to give that advice and direction which the members will assuredly seek, and which is fully appreciated, not only by the gas companies, but by the industry generally.

Happily another one of our foremost gas company administrators has seen his way to accept the Chairmanship of the Gas Companies' Protection Association. We refer to Mr. R. W. Edwards, who is Chairman and Managing Director of the Aldershot Gas, Water, and District Lighting Company. Both last year and this Mr. Edwards was, as Vice-Chairman, called upon to address the members of the Association at the annual meeting; and he has acquitted himself of his task in a manner which augurs well for the Association's continued activities. The election of Mr. R. Bruce Anderson as Vice-Chairman is equally appropriate, for Mr. Anderson's wide and diversified experience in connection specially with Irish gas companies must prove of great value. Thus the Association may confidently be expected to continue that career of useful activity by which it has been marked in the past, and the need for which is declared by members to have been never greater than it is at the present time.

Some idea of the sort of service which the Gas Companies' Protection Association offers to members will be gleaned from a study of the proceedings at last week's meeting, a full report of which will be found in this issue of the "JOURNAL." This service it has rendered for the past thirty years under a Secretary, in Mr. F. E. Cooper, who is, with all this experience behind him, an acknowledged authority upon gas company procedure. One has but to read, in the last paragraph but one of the report of the Committee for the twelve months ended Sept. 30 last, the list of some of the principal matters upon which he has during the year given information and advice. There is also an Income-Tax Sub-Committee, under the leadership of Mr. C. F. Botley; and of the work of this Committee members at the meeting were unstinting in their praise.

All this is apart from Mr. Edwards's address, which dealt with what may be termed the wider aspects of the Association's work, and did so in a convincing manner. No doubt the portion of the address which will receive most attention is the one which contains the statement that, in addition to being in full accord with the National Gas Council on the subject of the proposed amendment of gas legislation, the Association have put forward four separate proposals, approval of three of which has been expressed by Mr. Ronca.

New Thoughts on Old Holders.

THE holder disaster which occurred at the Bradford Road Works of the Manchester Gas Department on Aug. 23, 1927, and which was the subject of a Home Office inquiry early this year, focussed attention on a problem of the gravest importance, and seriously disturbed the peace of mind of the many gas managers who have ancient gasholders as part of their plant. Summarizing the result of the inquiry in the "JOURNAL" for Feb. 29 last, we said: "The position in which matters were left at the "close of the inquiry suggests the possibility of finding "that time and service had weakened the internal metal "work, and that this was the primary cause of the col"lapse. If this be so, then it will open up a vista of "research for the industry. . . ." Since then, of course, the Gasholder Construction and Deterioration Committee of The Institution of Gas Engineers, with Mr. W. Doig Gibb as Chairman, has come into operation; and the report of this Committee at the next annual meeting of the Institution is looked forward to with the keenest anticipation.

In later columns of our issue to-day we publish an exceedingly valuable address which was delivered by Mr. E. J. Sutcliffe, the Bradford City Gas Engineer, at a meeting of the Yorkshire Junior Gas Association at Leeds University on Oct. 27; and among several matters of lively interest discussed in the address is that of old gasholders. In December of last year, the transference to another works of the contents of a holder erected in 1861 (nineteen years previous to the erection of the Manchester holder) at the Mill Street Works of the Bradford Corporation was carried too far. In other words, pumping was continued after the holder had grounded, with the result that the crown was pulled in. This, of course, ought never to have happened; but in extenuation of the unfortunate occurrence, it must be noted that the event took

place on Boxing Day. The crown sheeting was badly buckled, but on the application of pressure to the bell, the crown quickly resumed its customary shape. Mr. Sutcliffe, however, in true Yorkshire fashion, did not allow appearances to deceive him; and thorough investigation brought to light that every tie-rod had been broken, and all the crown bracing and strutting buckled. Tests on one of the buckled crown plates (there was evidence of crystallization in several of these plates) at the Bradford Technical College showed that "the metal had lost its nature and was beyond useful service;" and it was wisely decided to renew the whole bell.

Mr. Sutcliffe's analysis of the working of old holders is of very great interest. Study of the crystallization of iron—the loss of its fibrous structure—has shown that this is caused not so much by gradually imposed and steady loads, but by sharp blows and sudden strains; and the method of construction of old holders is likely to set up conditions favourable to crystallization. The pulley channels of the cast-iron guide framing were seldom truly vertical, and hence the carriages, instead of being fixed on the main bars of the roof trussing, were positioned at intermediate points, in order that the flexibility of the sheeting would take any deviations of the channels from the vertical. This sheeting, however, was never intended to withstand these strains, which it is reasonable to suppose have a serious effect on its life, rendering its nature less fibrous. Moreover, since the cast-iron guides are not truly vertical, the pulleys at some part of their ascent must have play to a certain extent; and, to use Mr. Sutcliffe's words, "even in a slight wind the bell will be thrown forwards and backwards, causing more or less sudden and sharp shocks in the sheeting, especially in that in proximity to the pulley carriages. In a strong wind the shocks will be much sharper and heavier. At another point, the pulleys may be tight against the guides at part of, or even all the way round, the circumference; and here again the extra strain is thrown upon the sheeting." Altogether, then, the fibres of the sheets are subject to alternate compressive and tensile stresses—the very conditions likely to cause crystallization. Having studied the author's observations on this subject, our immediate desire is to express gratitude to the old-time makers of wrought iron; it was wrought iron in those days.

With regard to the question of coal buying, Mr. Sutcliffe emphasizes the need for constant vigilance to ensure uniform quality of deliveries from the collieries; and he maintains that the time is not far distant when separation of the dirt from coal—as distinct from the inherent ash content—will be undertaken at the pit-head. Already many collieries have wet washing plants, as a result of the treatment in which a considerable percentage of the dirt in the coal is substituted by water. The latter is better than dirt; but it has to be paid for as coal, costs money in freightage, and implies a greater coke consumption in the producers of the retort settings. The best solution of the dirt problem, he thinks, lies in the development of dry cleaning processes; and in this connection Bradford, in their new coal contracts, have agreed with a colliery company who have installed dry cleaning plant to base their prices on a standard ash content of 6 p.ct. This unquestionably is a move in the right direction.

In concluding this note on Mr. Sutcliffe's address, we must refer to his comments on pensions and salaries. In concerns which have no pensions scheme, there is no doubt that staff and employees work under a cloud. Throughout, they are continually faced with a very real menace—that through ill-health their means of livelihood may be taken away from them. In defence of this, it may be said that by the time a salaried man reaches retiring age he ought to have saved sufficient money to support him during the final phase of his existence. The truth of the case is, however, that very few salaried men are able to save anything like sufficient to enable them, unharassed, to pass their last few years. Indeed, they are not given their salaries for this purpose. And we think our readers will agree that superannuation not only makes any gas undertaking more vital, and encourages the younger men to give of their best, but results in a better class of man entering the service of the undertaking. As for salaries, speaking generally, there has been great improvement in late years, and most gas companies are fully prepared to pay a man what he is reasonably worth. At the same time, we know of instances where the remuneration offered by municipally-governed concerns is totally inadequate for the services demanded. The reasons are not far to seek.

Æsthetic Gas Heating.

IN his Presidential Address to the British Commercial Gas Association at their annual meeting in York (see "JOURNAL" for Oct. 24, p. 251), Mr. Procter emphasized that heating and ventilating arrangements cannot be embodied as an afterthought in the design of a building; they must be incorporated in the initial plans. As our readers are aware, we are in thorough agreement with this view, which was amplified in particular reference to the gas fire by Sir Lawrence Weaver, K.B.E., in a paper on "Design in Industry" at the same meeting. Sir Lawrence is President of the Design and Industries Association and of the Architectural Club, and constant and intimate contact with architects has convinced him that the gas industry is not yet fully alive to the importance of securing the whole-hearted and continuous support of the architectural profession; and he points out in his address—an extract of which is published in this issue of the "JOURNAL"—that the favourable opinion of even one eminent architect may have a far-reaching effect on the employment of gas for heating.

As gas is a modern fuel, Sir Lawrence is of opinion that the means for its utilization should also be modern; and even to-day, he thinks, the industry does not sufficiently recognize that gas is what may be termed a flexible fuel. While according praise to the manufacturers who have, by producing gas fires of a character suitable to various historical styles of decoration, "done a considerable service to the architectural profession," he thinks that the primary appeal to the architect should be made through the "inset" fire, which, of course, leaves him free to execute his own designs of setting; and he deplores the fact that some gas undertakings make no organized attempt to exhibit the very type of fire which is likely to interest the architect. The advent of the inset gas fire eighteen years ago was, Sir Lawrence reminds us, the outcome of the inventive genius of Mr. H. J. Yates and the admirable enterprise of such firms as Messrs. John Wright & Co. and the Davis Gas Stove Company.

Now we are very fond of the inset fire, and we fully appreciate its adaptability; but the fact remains—and we would emphasize this strongly—that the gas industry aims at offering its heating service (as, indeed, all other services) not to any particular group of consumers, but to all classes, rich and poor alike. Thousands and thousands of people would not be enjoying efficient gaseous heating to-day if the industry had not catered for their needs by offering for sale (either outright or on hire-purchase terms), or by letting out on hire or on free loan, perfectly satisfactory gas fire units the installation of which in existing coal grates entails practically no expense. Nor are these fires mere makeshifts or unhappy plagiarisms of the old-world coal grate. A self-contained gas fire in a suitable tiled surround can be a very pleasant object indeed—always provided (and this is very important) that sufficient trouble is taken by undertaking and consumer to ensure a respectable job of fitting work.

Of course, taste is a strange thing, though an admirable indication of the strength of a man's convictions and of his æsthetic sense. We should greatly welcome the opportunity of displaying a series of gas fires designed by prominent architects, and appropriately labelled, in conjunction with another series displaying the possibilities of what we will label ordinary fires. We should invite a hundred consumers to visit the showrooms and select (free of charge) gas fires which appealed to their taste. The next day, having overnight changed the labels, we should invite another hundred consumers to select fires. This would throw an interesting light on the "taste" of consumers. The second selection would probably be diametrically opposed to the first. Then again, while the architect may be displeased with the æsthetic effect of some cheap gas fires, we are often highly displeased with the æsthetic

effect of some cheap houses. "It is a question of money," we are informed by the architect. Precisely the same answer could be given in respect of certain gas fires, with this addendum—that whereas the latter function efficiently, cheap houses are notoriously capricious in their ability to withstand climatic conditions. Sir Lawrence Weaver, commenting on the gas fires of the 'eighties, observes that they were made to designs both fearful and wonderful; and he speaks of frames of contorted ugliness. We thoroughly agree with him, but we put the blame not on the gas industry or the appliance makers, but on the spirit of the age. At that time, frippery was the order of the day, and no home was complete without an imposing array of "knick-knacks."

We make no apology for quoting the following from Sir Lawrence Weaver's address: "I have been depressed "by what seemed to me a lack of effective salesmanship. "The assistants have invariably been courteous, but "they do not seem to be aware of the very marked dif- "ferences that exist between the various patterns (of "gas fires) exhibited, and were not ready with much "helpful advice as to why I, as a potential buyer of a "gas fire, should have one type rather than another. "Many of them did not appear to see that there is, for "example, a fundamental difference between the self- "contained fire and the inset fire which ought to be ex- "plained. I occupied myself with asking questions, to "which I already knew the answers, to see if they knew "them. They obviously should have known them better "than I did, but few of them had any answer at all. They "were, indeed, rather puzzled by my questions." It is in such matters as this, of course, that the Salesmen's Circles should be of benefit to the members. As we remarked in a recent issue of the "GAS SALESMAN," the gas consumer appreciates intelligent assistance from a well-informed salesman equally as well as the pale civilities of pure altruism.

There is one more point in Sir Lawrence Weaver's address to which we must refer before concluding this note. The author rightly attaches great importance to well-designed and properly equipped gas showrooms. If the gas industry is desirous of gaining the goodwill of the architect, it is important that the showrooms should exhibit an architectural amenity which will render it a pleasure for the architect to visit them himself, and—what is more important still—to make a practice of taking his clients with him. It is good to realize how thoroughly Sir Lawrence understands and approves of the efforts which the industry has made, and is making, in this movement—a movement which, Sir Lawrence mentions, has been so largely stimulated by Mr. Cyril Davis.

An Audience.

Last week we ventured to suggest that the notice accorded the gas industry by the Political Correspondent of "The Times" might presage Government recognition of the widespread feeling that the industry is not getting a fair deal. We are encouraged to think we read the omen aright by announcements in the Daily Press to the effect that the President of the Board of Trade will receive, shortly after the opening of Parliament, a deputation from the National Gas Council, who will once more plead the case for amending legislation. It is earnestly to be hoped that appeal to a higher court will not be necessary.

Mirabile Dictu.

Colonel Wilfrid Ashley, the Minister of Transport, has—whether through stings of personal conscience or from political expediency—made a commendable effort to eat the words with which, at a bridge opening ceremony, he managed to offend a large and important section of the community. As was reported in last week's "JOURNAL" (p. 332), strong protests against this latest flagrant example of biased industrial propaganda were made by Sir David Milne-Watson and Mr. Robert Ray on the occasion of the Coke Oven Managers' visit to Beckton. The Minister's transgression having occurred at the opening of a bridge, which to the best of our knowledge is in no way concerned with electricity, his apology (for so we take it) was staged, more appropriately, at the inauguration of electrical plant at Romsey. He told his audience on this occasion that when electricity comes into a district it need not hurt the gas industry. We are relieved.

British Tar for British Roads.

There can be no doubt whatever of the justice of the claim made by the President of the British Road Tar Association, Sir David Milne-Watson, LL.D., D.L., that the position of tar as a road making material in this country has been greatly strengthened by the collective efforts that have been put forward. It will be remembered that the Association was preceded by excellent work on the part of the Joint Tar Committee set up in 1924 to represent gas tar producers, coke oven tar producers, and tar distillers; but the fusion of the three main interests represented by the Association, for the purpose of joint working in propaganda, has naturally led to broadening of effort which has proved of material benefit to each. Gratifying progress has been made with the two main objects with which the Association started its career—to improve the quality of tar for use in road construction throughout the country, and to make known the unique qualities of British tar for all purposes connected with road making. Approval of the Ministry of Transport has been obtained of a revision of the No. 1 and No. 2 Road Board Specifications for Tar; but in connection with this, the President, in his address on the occasion of the recent first annual general meeting of the Association, urged upon all tar producers and distillers the necessity of regarding the Association's specifications as a minimum standard from which further advances will have to be made as time goes on. Another point made by the President was that much still remains to be done by the Association in the application of tar for various road uses. As he said, a good deal of the criticism which has been directed against tar arises from incorrect methods of application which have been adopted in its use. It will be the duty of the Association to give serious consideration to this question; and it is hoped that ultimately improved methods for the application of tar embodied in scheduled instructions will be made available.

Generous Support Needed.

It is clear from the President's address that there is much good work for the British Road Tar Association to do, but, obviously, to do it thoroughly calls for a sufficiency of financial support. Much more could be accomplished with larger funds, and the President made a suggestion to members to use their personal influence in obtaining additional support for the Association. We feel sure that there will be a ready response to this appeal. The figures quoted by him on the occasion of the meeting show how important the question is, both to the industries concerned and to the country generally.

Gas in the Far East.

Within the last few months we have published two interesting accounts of the growing demand for gas in the Far East. First there was the narrative of "Gas Supply East of Suez," which Mr. S. Barker Johnson, the Chief Engineer to the Colombo Gas Company, presented at the Cardiff meeting of The Institution of Gas Engineers last June, and which appeared in the "JOURNAL" for June 20. Then, on Oct. 3, we published the fascinating history of the Japanese gas industry since its inception in 1872 to the present day, which Sakura Okamoto contributed to the proceedings of the World Power Fuel Conference. At the time we referred to this as a veritable Oriental romance. Now, in to-day's issue of the "JOURNAL" will be found an article by Walter Buchler on the conditions of the gas industry in China—an article which indicates that, in spite of efficient electrical competition, gas is being more and more employed both by the Chinese and by the foreign residents. At present the major demand is in Shanghai and Hong Kong; but with the growing industrialization of the country, the demand is bound to spread to other important centres. The Chinese are now exhibiting much greater national feeling than formerly, and are making great efforts to become a more united nation. They are both clever and energetic; and if they can settle

down, there is little doubt that they will become a great power in the world. These present efforts are bound to raise the general standard of living in the country, and this will entail greater gas usage, particularly for cooking and heating purposes. Included in Mr. Buchler's article is an interesting table showing the imports into China of gas fittings, stoves, and grates during recent years.

Ascension Pipes and Calorific Value.

Interested in the recent discussion on the control of calorific value in the retort house—see "JOURNAL" for Oct. 24—Mr. H. J. Toogood contributes to our issue to-day an article which points to the desirability of mixing the gases from various retorts prior to their passage through the ascension pipes, instead of the present practice of mixing them in the hydraulic main. Likening the ascension pipe to a chimney, Mr. Toogood explains that during the early stages of carbonization the chimney-effect of the ascension pipe is at its minimum, while during the later stages it is at its maximum. This, he emphasizes, is the direct opposite to the condition desirable for uniform calorific value of the gases leaving the retort house; for the rich gases are degraded by prolonged time-contact, and the calorific value of the lean gases is reduced by incipient filtration from outside sources. His remedy, which is set out in diagrammatic form, lies in connecting neighbouring mouthpieces, retaining two outlets per retort, furnishing one ascension pipe per retort, and stoking the connected retorts alternately, "so that the charges in these retorts are at all times in widely different stages of distillation." Economy, he maintains, is added to the technical advantage of an increased gaseous thermal yield of more constant calorific value.

Yorkshire and the Education Scheme.

At the annual meeting of the Yorkshire Junior Gas Association on Oct. 26, Mr. James Bridge (Engineer and General Manager to the Elland-cum-Greetland Gas Company), speaking as Chairman of the Yorkshire District Gas Education Committee, called attention to the fundamental differences between the Education Scheme of the Institution of Gas Engineers and the examinations of the Institution of Civil Engineers and the Institution of Mechanical Engineers. To adopt the simplified codes of the latter Institutions—as, apparently, has been suggested from time to time—would be to ruin the essence of the Scheme, which is definitely one of education, and not merely of examination. The formation of these District Committees was an excellent move. Regarding this, the observations of Mr. Bridge on what the Yorkshire District Committee have already accomplished lend added conviction. Already much has been done to cater for those students who find it difficult to attend the approved educational centres; but that a great deal still remains to be accomplished is evident from the statement of Mr. Bridge that, while at present in Yorkshire there are 80 students, there are over 180 potential students. As time goes on, possession of the Diploma will probably be an essential qualification for admission to membership of the Institution; and it behoves every junior to prepare for the time when he can claim membership.

PERSONAL.

The municipal authorities of the City of Santos, Brazil, have signified their appreciation of the signal services of Mr. BERNARD F. BROWNE, Chief Engineer to the City of Santos Improvements Company, during a long period, by naming a street in Santos after him.

Mr. C. H. WOODWARD, the Borough Electrical Engineer, has been appointed Public Lighting Superintendent and Gas Examiner for the County Borough of Bournemouth in the place of Mr. N. Wright, the late President-Elect of the Association of Public Lighting Engineers. Mr. Woodward, who is a member of the Association, will retain his appointment as Electrical Engineer.

Mr. STANLEY H. L. MUGFORD has been appointed Second Engineer to the Valparaiso Gas Company, South America, on a three years' agreement, and sailed from Liverpool to take up his new post on Thursday, Nov. 1. After serving his articles with the late Mr. Francis Chalmers, at the St. Marychurch Gas-Works, Torquay, Mr. Mugford was appointed Assistant Engineer. He served later with the South Metropolitan Gas Company, and subsequently joined the operating staff of the Woodall-Duckham Vertical Retort and Oven Construction Company, Ltd., for whom he has carried out work in Denmark, as well as in many parts of England.

Members of the gas industry, and particularly those in Yorkshire, will be glad to learn that Mr. CHARLES T. B. ROPER, Mains Superintendent of the Bradford Corporation Gas Department, who has lately been seriously ill, having undergone two operations, is now back at business. Mr. Roper was one of the founders of the Yorkshire Junior Gas Association; and he has been a member of the Council, former Secretary and Treasurer, and a foremost member of the Association throughout its career.

Mr. J. NEVILLE SPELLEN is now representing Messrs. Sidney Flavel & Co., Ltd., of Leamington, in South-West England and South Wales.

OBITUARY.

DR. FREDERICK MOLLWO PERKIN.

News has been received of the death, in London, of Dr. FREDERICK MOLLWO PERKIN in his 59th year. He was elected an Hon. Member of the Institution of Gas Engineers in 1917. Dr. Perkin was the youngest son of the great Sir William Henry Perkin, the discoverer of aniline dyes and especially of "Perkin's purple." Sir William, in recognition of his chemical work, received, in 1892, from the Institution their Birmingham Gold Medal.

The subject of our memoir was educated at Amersham Hall School, Reading, and studied science at the Royal College of Science, London; at the Heriot-Watt College; at the University of Edinburgh; at Owen's College, Manchester; and at the University of Wurzburg, where he gained the degree of Ph.D. From 1897 to 1909, he was Head of the Chemistry Department at the Borough Polytechnic, London, and afterwards established a consulting practice, with laboratories, in London and in Harrow, devoting special attention to problems connected with electro-chemistry, the carbonization of coal, the production of smokeless fuel, and the utilization of peat. Dr. Perkin was one of the founders of the Faraday Society, which, on Friday next, is celebrating its silver anniversary.

Dr. Perkin rendered valuable service as a member of the jury of the Franco-British Exhibition of 1908; of the Brussels International Exhibition of 1910; of the Turin International Exhibition of 1911; and of the Ghent International Exhibition of 1913. As an author, he produced various text-books for the use of chemical students, in addition to numerous contributions to the Transactions of the Chemical Society, of the Faraday Society, and of the Society of Chemical Industry. He also delivered, before the Society of Arts in 1915, a series of Cantor Lectures on the subject of oils. In 1920, he was gazetted a Commander of the Order of the British Empire, for services given to various Government Departments during the war. He was elected a Fellow of the Institute of Chemistry in 1911, and served on its Council from 1920 to 1923.

Mr. CHARLES DAKIN, who was Managing Director of the Cradley Heath Gas Company, died on Oct. 29, following a seizure in the early morning of that day. He was in his 72nd year. Mr. Dakin joined the Company as Secretary and Manager in 1876, and was appointed Managing Director in 1919—a position from which he retired in June of this year, after fifty years' service. He was well known in Masonic circles, being one of the founders, and a Past Master, of the Murdoch Lodge, Birmingham. He is succeeded by his son, Mr. CHARLES FREDK. DAKIN, as Engineer and Manager; and Mr. ARCHIBALD BROWN has been appointed Secretary and Joint Manager.

We regret to learn through his London Agents (Messrs. John Coates & Co., Ltd., Victoria House, Melbourne Place, Strand, W.C. 2) that the Hon. GEORGE SWINBURNE, M.Inst.C.E., formerly of the Metropolitan Gas Company of Melbourne, while in Parliament House, Melbourne, on Tuesday, Sept. 4, was suddenly seized with a heart attack from which he succumbed on the same day. He was elected to membership of The Institution of Gas Engineers in the year 1897, during the presidency of Mr. C. Stafford Ellery, of Bath; and at the time of his death was residing at Kinkora Road, Hawthorn, Melbourne. Members of the Institution who attended the visit to Cambridge when Mr. Robert G. Shadbolt was President may remember that Mr. Swinburne was present on that occasion, and at the luncheon, which was held at the Guildhall, proposed one of the toasts. Mr. Swinburne leaves a widow and daughters. His British confrères will desire to extend their sincere sympathy with them in their sorrow.

ON THE ELECTRICAL SIDE.

Electricity Agreements.

As an illustration of the difficulties which still crop up in connection with the creation of large electricity districts, which the "Financial Times" considers are alone compatible with the supply of current at cheap rates, it quotes the case of the Godalming undertaking, which is certainly an interesting one. The details set forth in the pages of our contemporary last Saturday show that, as a result of negotiations between the Urban Electric Supply Company and the Aldershot Gas, Water, and District Lighting Company, the latter some time ago agreed provisionally to purchase from the former the Godalming electricity undertaking. The Order was, however, originally granted to the Godalming Corporation, who transferred it to the Urban Electric Supply Company, on condition that they should have prior right to buy-back the Order should the Company at any time wish to dispose of it. Now the Corporation have refused their assent to the disposal of the Godalming undertaking to the Aldershot Gas, &c., Company. Our correspondent understands that negotiations are still proceeding between the Godalming Corporation and the Urban Company, and it is not unlikely that the Corporation may come to an arrangement to take over the undertaking itself at once instead of waiting until the ultimate date in 1938. The Aldershot Company might, therefore, be able eventually to do a deal direct with the Corporation. The attitude of the Directors to the situation generally has been well expressed by the Secretary of the Company (Mr. F. A. Ricketts) in a statement in which he says the Board "feel that the public will be best served in the cheap supply of electricity by the fullest advantage being taken of the arrangements now developing, and by the administration of conveniently large—rather than inconveniently small—tracts of territory." To this end his Company had provisionally acquired the Godalming undertaking, and have built up, subject to the approval of the Electricity Commissioners, a territory over which they believed that it would be most economical to supply electricity.

Christmas Gifts.

Who are the persons that receive the avalanches of Christmas gifts which disappear from the shops towards the close of each year? The givers are easily enough found, but not so the recipients. Many of the things one sees displayed for sale have little claim to consideration on the score of attractiveness, and still less on that of utility. Nevertheless they disappear—but where do they go? Can it be that, in their modesty, those who receive them promptly place them where the eye of the curious can never again rest upon them? Can it be that they are consigned to an even more ignominious fate? All of us have heard of, if we have not actually seen, the particular brand of cigar which tradition says that mothers-in-law are wont to dispense; and the same with the impossible ties which loving wives are supposed to select as gifts. It must be a terrible season indeed for some people. The wisdom of the Scriptures has been handed down to us through the centuries, and still "It is more blessed to give than to receive." While this must always remain true, there does seem to be an opening for a Society for the Abolition of Useless Christmas Presents. This, however, must come later on. The reform must begin at the beginning—with the raising of the status of the Christmas Gift by the retail trader.

If Electrical, Why Not Gas?

Now, to this end the "Electrician" has come forward with a suggestion; and a very good suggestion it is. So good, indeed, that we feel inclined to commiserate with the proposer upon his somewhat unhappy choice of words. What he actually says is as follows: "A moment's thought of the sort of rubbish that is bought for Christmas presents is quite enough to convince anyone that small pieces of electrical apparatus—the little luxuries that are always so welcome—are ideal for the purpose." However, as we say, there is no doubt whatever about what he means; and so we would ask: "If electrical appliances, why not gas?" There is no time to lose, if this hint is to be acted upon. We could name gas appliances that, appropriately bestowed, would be enthusiastically welcomed; but, alas! it would be the old, old story. The writer of this note, whose house is provided with gas points only, would receive an electric curling iron; while some one else who had just moved into a service flat would have sent to him an eye-level gas-cooker. Will our contemporary go a step farther, and see that the little electric luxuries the distribution of which at the season of peace and goodwill to all men he advocates are appropriately bestowed? That is more than half the battle.

Transmission Problems.

Some important points were emphasized by Mr. R. Borlase Matthews, in his Presidential Address to the Overhead Lines Association. Among other things, he remarked that one of the new problems that have arisen for solution by the overhead line engineer was that of adequately earthing lines transmitting considerable power at very high pressures. Several new factors had come to light during the past few months, and in particular the danger due to induction. Two accidents had occurred recently where men working on telephone lines had been killed. In one case the telephone line was many miles away from the power lines. Contrary to previous ideas on the subject, practical and methodical investigations showed that the effect of a heavy short-circuit on a big line was transmitted for the best part of a mile into the earth.

An Obsolete and Dangerous System.

In his report issued for publication upon subway fires in London last September, which were investigated by Dr. F. J. Waldo, M.A., there are statements which should receive weighty consideration. Dr. Waldo, as H.M. Coroner for the City of London, is at present the only individual with authority to inquire judicially into non-fatal and fatal fires, with power to commit for trial for arson or incendiarism on the verdict of a jury. The Departmental Committee on Coroners in 1909 recommended that the benefits of the City of London system of fire inquiry should be extended to the country at large. Dr. Waldo ends his report with the remark that "these three subway fires, interpreted in the proper spirit, appear to convey warnings that may prove of no little importance to the community." Reference has already been made in our pages (see "JOURNAL" for Oct. 24, p. 278) to the inquiry, which was in connection with three subway fires, the cause of each of which was found to be a defective London County Council switchbox connected with the main cable in the subway on the one hand, and the lamps on the Embankment on the other. Regarding the first, and larger, fire, which occurred on Sept. 8, the Jury said they were not satisfied with the London County Council methods of inspection of the lighting system within the subway. Further, in their opinion, no cables carrying electric current should be allowed in the subway unless adequately protected by fire-resisting material. All timber in the subway should be replaced by metal or non-inflammable material. They found that the delay of practically 2½ hours in dealing directly with the fire would not have occurred had the fire brigade officials been fully informed beforehand of the contents of the subway in their particular district. Although agreeing that the fire was due to a defective lighting plant with its attendant high voltage, the Jury did not think that cables of high voltage, if properly protected, should be excluded from the subways. In respect of this fire, they added the following rider to their verdict: "In our opinion the London County Council electric system is obsolete and dangerous. It should be replaced by an up-to-date system, thereby eliminating the danger of fire. The London County Council lighting cables should have been overhauled more systematically by an expert after the flooding which took place in January last, as the water affected the cables."

Subway Risks.

Dr. Waldo's report goes on to say that, in view of the extent of the subways in London, a little over 6 miles in length, it is desirable to weigh carefully the risks attending their use, as revealed by these three inquiries. These risks may be divided into: (1) Flooding; (2) fire and gas explosion. The risks of gas explosion cannot be lightly dismissed. So long as gas mains are permitted to be associated with high voltage electric cables in a subway, so long, in his opinion, must the risk of ignition and of explosion be present. Dr. Waldo's view is that if gas mains are placed in subways they should be encased in concrete or other imperishable material. Further, that in no circumstances is it wise to introduce high-tension cables into these underground passages in conjunction with coal gas, wood, or other inflammable or combustible materials.

Encouraging the Off-Peak Load.

Certain new charges to domestic consumers, which are of interest, have been adopted by the Willesden Urban District Council Electricity Department. All current consumed is to be charged at ¾d. per KW.-H.; but there is a service charge based upon the number of lamps included in the installation. These range from a minimum of 3s. per quarter in summer and 4s. per quarter in winter for 4 lamps. Each extra lamp installed involves an addition to the service charge; the highest number of lamps referred to in the printed tariff being 22, for which the summer and winter quarterly service charges are £1 5s. and £1 15s. respectively. The principle of the scheme is to make a greater increase in the charge per additional lamp in the case of larger installations than in that of smaller ones. The Council also offer to provide electric water heating tanks of not less than 10 gallons capacity, and to supply an agreed quantity of energy for an agreed charge for lighting and water heating, without a meter—any additional supply for heating or cooking, &c., to be supplied through a meter at ¾d. per KW.-H. The heating energy is reduced by automatic apparatus as the lighting is increased, and increased as the lighting is reduced.

POTENTIAL INVESTMENTS.

XVII.—THE LEA BRIDGE DISTRICT GAS COMPANY.

The Lea Bridge District Gas Company was established in the year 1868 and incorporated by Special Act in the year 1878, further powers being obtained between the last-mentioned year and 1925.

Head Offices: 63 and 64, Chancery Lane, W.C. 2.

The statutory area of supply covers approximately 10 square miles, and comprises the whole of the parish of Walthamstow (which includes Highams Park and Hale End) and part of the parish of Leyton. Consumers number 34,038.

The capital of the Company as shown by the last accounts (Dec. 31, 1927) is as follows:

Capital Stocks.

	£
5 p.ct. consolidated ordinary	235,242
5 ,, preference	15,000
6 ,, ,,	30,000
Premiums received	21,693
Remaining to be issued	178,307
Total amount authorized	£480,242

Loan Capital.

	£
4 p.ct. perpetual debenture stock	44,876
7 ,, redeemable ,, ,,	35,550
7½ ,, ,, ,, ,,	35,000
Remaining to be borrowed	109,574
Total amount authorized	£225,000

Premiums received on the 4 p.ct. debenture stock, £3502.

Transfer arrangements: Common form. Fee for registration of transfer, death in joint holdings, marriage, power of attorney, or distringas, 2s. 6d. Separate deed for each class of stock which is transferable in amounts and multiples of £2. Husband's witness of wife's signature, or *vice versa*, not accepted. Voting—1 vote per £50 ordinary stock; the preference stock does not confer voting rights.

Accounts and Dividends.—Accounts made up annually to Dec. 31, and submitted in March; dividends (ordinary and preference) being paid in September and after the annual general meeting. The standard price of gas is 1s. 4½d. per therm; present price 8⅝d. per therm; declared calorific value 500 B.Th.U. per c.ft. Dividends on the ordinary stock are subject to sliding-scale—viz., ⅛ d. per therm above or below the standard price = ⅝ p.ct. per annum in dividend.

The following table illustrates the progress made by the Company prior to the war and during the past five years. The years 1914 to 1922 are purposely ignored owing to the abnormal conditions then prevailing.

Year to Dec. 31.	Average Gross Selling Price of Gas Per 1000 C.Ft.	Quantity Sold. Thousands C.Ft.	Capital Employed per 1000 C.Ft. Sold.	Gross Profit.	Total Charge for Capital. (*)	Rate of Dividend Paid. P.Ct per Annum.	Amount Carried Forward and Balance Reserve Fund.
	s. d.		s. d.	£	£	£ s. d.	£
1903 .	3 8·5	203,180	19 6	13,735	12,135	6 0 0	9,324
1908 .	3 6	306,941	15 2	15,445	14,822	6 0 0	16,305
1913 .	3 0	435,799	11 8	17,430	17,379	6 7 6	24,852
	Per Therm. d.	Therms.	Per Therm. s. d.				
1923 .	10·375	3,560,697	2 3	27,486	24,967	6 10 0	40,683
1924 .	9·5	3,977,284	2 1	24,576	23,332	6 10 0	42,086
1925 .	9·5	4,099,357	1 11	30,963	25,956	6 10 0	49,171
1926 .	9·75	4,344,675	1 10	25,779	23,950	6 10 0	50,475
1927 .	9·75	4,534,968	1 9	41,632	29,241	7 0 0	65,812

(*) The total charge for capital includes dividend and interest and amount (if any) carried to reserve fund.

The outstanding features of the above statement are (1) the remarkable increase in the gas sold during the year 1927 as compared with the year 1903 (nearly 350 p.ct.), and (2) the reduction in capital employed, which is equal to 8s. 6d. per 1000 c.ft. as compared with 19s. 6d. in the earlier year. Moreover, the present price of 8⅝d. per therm is a low one having regard to the situation of the Company's works, which permits only of rail-borne coal. In addition, it will be seen that the amount of the carry-forward and balance of the reserve fund has increased from £9324 to £65,812.

The following table shows the highest and lowest prices of the 5 p.ct. consolidated ordinary stock during the past five years, the dividends paid, and the yield p.ct. per annum calculated on the average price.

Year.	Transactions. Highest.	Transactions. Lowest.	Dividend.	Yield P.Ct. per Annum on the Average Price.
			£ s. d.	£ s. d.
1923	102	94½	6 10 0	6 12 4
1924	98	95	6 10 0	6 14 9
1925	102	96	6 10 0	6 11 4
1926	99½	94½	6 10 0	6 14 0
1927	97	94½	7 0 0	7 6 2

In common with other gas stocks the price has risen during the current year, the present average quotation being 99½; but having regard to the fact that £7 10s. p.ct. per annum dividend has been paid for the first half of the year, the stock is still a very profitable investment, yielding £7 10s. 9d. p.ct.

FORTHCOMING ENGAGEMENTS.

Nov. 10.—LONDON AND SOUTHERN DISTRICT JUNIOR GAS ASSOCIATION.—Visit to the Vauxhall Works of the South Metropolitan Gas Company.

Nov. 10.—WALES AND MONMOUTHSHIRE JUNIOR GAS ASSOCIATION. Meeting at Cardiff. Paper by Mr. J. Hislop.

Nov. 14.—SOUTHERN ASSOCIATION OF GAS ENGINEERS AND MANAGERS.—General meeting at the Hotel Cecil, Strand, W.C. 2, at 2.15 p.m.

Nov. 15.—MIDLAND JUNIOR GAS ASSOCIATION.—Meeting in the Council House, Birmingham. Paper by Mr. F. C. Sylvester on "Internal Producers."

Nov. 17.—SCOTTISH JUNIOR GAS ASSOCIATION (WESTERN DISTRICT).—Visit to the Stonebyres Hydro Station of the Clyde Valley Electrical Power Company.

Nov. 17.—YORKSHIRE JUNIOR GAS ASSOCIATION.—Meeting in Bradford. Presidential address of Mr. S. H. Packer, and inspection of the Birkshall Works of the Gas Department.

Nov. 21.—BRITISH COMMERCIAL GAS ASSOCIATION.—Executive Committee, 12 noon; General Committee, 2.30 p.m.

Nov. 22.—SOCIETY OF BRITISH GAS INDUSTRIES.—Autumn general meeting. Hotel Cecil.

Nov. 24.—NORTH OF ENGLAND GAS MANAGERS' ASSOCIATION (AUXILIARY SECTION).—Meeting at the Howdon Works of the Newcastle and Gateshead Gas Company, at 2 p.m. Address of the Chairman, Mr. G. E. Anderson, B.Sc.

Nov. 30.—LONDON AND SOUTHERN DISTRICT JUNIOR GAS ASSOCIATION.—Meeting at the Westminster Technical Institute, 7.30 p.m. Paper by Mr. A. T. Green, F.Inst.P., A.M.I.Chem.E.

INSTITUTION OF GAS ENGINEERS.

Nov. 12.—Finance Committee, 10.30 a.m.; Benevolent Fund Committee, 11.0 a.m.; Executive Committee, 11.30 a.m.

Nov. 12.—Council meeting, 2.30 p.m.

Nov. 13.—Board of Examiners, 11 a.m.; Gas Education Executive Committee, 4 p.m.

THE EVENING STAR LODGE, No. 1719.

The October regular meeting of the Evening Star Lodge, No. 1719, which was held on Oct. 24, at Freemasons' Hall, Great Queen Street, London, was of exceptional interest from the circumstance that two gentlemen who are very well known in the Gas Engineering profession were admitted to its privileges. They were Mr. Robert Watson Hunter and Mr. George Hay Morgan, K.C.

The Worshipful Master, W.Bro. Arthur L. Croager, performed the principal part of the ritual during the initiation of Mr. Hunter, who was granted the privilege of precedence, as he is a lewis, being the son of the late W.Bro. Robert Hunter. Mr. Morgan's admission was conducted by W.Bro. Arthur E. Broadberry, P.M., L.R.

The candidates received together from the Worshipful Master the words of the concluding address.

The visitors (in addition to those mentioned below as responding to the toast of "The Visiting Brethren" at the dinner which was subsequently held) included W.Bro. Alfred Thompson (Fulham) and Bro. Harold C. Smith (Tottenham).

The post-prandial speeches, in the submission of, and the responses to, the customary masonic toasts, were of a high order; the peroration of Bro. Morgan in acknowledging "The Initiates," and that of R.W.Bro. S. Holzer (Past Grand Steward of the Grand Lodge in the State of New York, U.S.A., P.M. of the Daniel Carpenter Lodge, No. 643), in replying to the toast of "The Visiting Brethren," being particularly interesting and informative. The other guest brethren who also replied to the latter toast were W.Bro. Robert W. Kipling, W.M. of the William Rogers Lodge, No. 2823; W.Bro. R. J. H. Sayers, P.A.G.D.C. West Lancashire, P.M. of the Northern Star Lodge, No. 3053; W.Bro. L. J. Langford, W.M. of the Men of Kent Lodge, No. 4273; and Bro. R. J. Meiklejohn, Senior Warden of the Murdoch Lodge, No. 3480.

The speeches were interspersed with an excellent selection of vocal and elocutionary items, which greatly added to the enjoyment of a most successful evening.

The World Fuel Conference and the Gas Industry.

A Retrospect.

By E. W. SMITH, D.Sc., F.I.C., and T. CAMPBELL FINLAYSON, M.Sc.

A Series of Four Articles: I.

The World Power Conference on Fuel held in the Imperial Institute, London, from Sept. 24 to Oct. 6 is rapidly becoming a matter of history.

Upon certain features there will be little dispute. The large and representative membership, with delegates from 48 nations, the systematically large attendance at the various Sessions, and the distinguished patronage under which the conference met, all indicate how wide an interest is taken in fuel matters. Further, the daily and the technical Press, realizing the predominant position of fuel in present-day developments, gave considerable publicity to the deliberations of the conference.

The Conference and World Peace.

Probably two features may be taken as being responsible for the fact that this highly technical conference occupied the attention of both layman and technician for nearly a fortnight. First, there was the international aspect. The Marquess of Reading, as President, stated that in his view the main impression of the conference was that representatives of many nations—some of them only recently at war—were met, without regard to political differences, to engage upon a common object, with a desire not so much to add to the assets of their particular nation as to contribute to the knowledge of the whole world. That was a great ideal. That common interest of seeking to develop the prosperity of the world made them all politicians, co-operating for the great World Peace for which all were striving.

A Tremendous Problem.

World Peace is a tremendous problem, and it will never come without striving and understanding. Is it a fantastic thought that—as was expressed at the time—the World Power Conference at its various meetings may act to some extent as a "catalyst" in the development of World Peace? There can be no doubt that the delegates from various parts of the world did contribute papers of real intrinsic value, and thus added to the common pool of knowledge. Whether we turn to Russia, Germany, France, or America, we find the publication of information hitherto unknown. Scientists and technical men discussing a specific problem, such as fuel, have no racial barriers. They find that they are faced, whether they come from Japan or Austria, with the same need for blending coals. They find, and indeed urge, that there should be world standardization on nomenclature and units, so that they may understand each other's literature. There can be little doubt that the delegates from the Dominions and other lands went away from the World Fuel Conference with the feeling that they understood a little more the viewpoint and difficulties of this country. As one American delegate expressed it in a letter to the Editor of "The Times:" "This is the second time it has been my privilege to serve as a delegate to a World Power Conference here, and each time I am with you I leave, if possible, just a little more Anglophile than before, and with just a little greater appreciation of the fundamental blood-brothership of the two great Anglo-Saxon nations. Surely the peace of the world can lie in no safer hands."

The present writers have stressed this aspect of the conference in order to show that science, at whose head is levelled the charge of being the inventor of methods for world destruction, may yet hold the most potent force for world peace.

Authoritative Contributions.

The second feature which attracted attention was the fact that the various contributions were presented through

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authoritative bodies in the countries from which they originated. They therefore came with a greater force than if they had been merely individual views.

It is, however, mainly on its technical merits that the Fuel Conference of 1928 must be judged. Has it made any technical contributions to world fuel problems? Have the many months of labour in its preparation merely resulted in a fortnight's meetings, and the printing of three large volumes of transactions; or will the deliberations make a vital contribution to industrial progress? These are difficult questions to answer which time alone will prove; but it is the intention of the present series of articles to review the conference from the point of view of the gas industry.

THE CONFERENCE DISCUSSIONS.

At the time of the meetings many of the delegates had not had the opportunity to study the papers in detail; and this probably accounts for the fact that on the whole the discussions did not come up to the uniformly high level of the papers presented. It was, indeed, impossible to expect adequate discussion of a group of (say) eighteen papers in the course of two hours by delegates from as many as twenty nations represented at one session. A number of the individual papers could usefully have employed the whole of the time allotted for the consideration of a group of papers. A certain amount of criticism has been expressed concerning this "crowding" of the sessions. The organizers had a difficult problem to face. There was a limit to the reasonable duration of such a conference. It was therefore necessary either drastically to limit the number of contributions, to enable each separate paper to be presented and discussed; or, alternatively, to encourage the presentation of papers from the authoritative technical bodies all over the world, to group these papers under sections, and have them discussed at the conference through the medium of a General Report which presented the main features of the group of papers, and outlined the agenda for discussion. It is felt that the high level of the papers is the best comment on the wisdom of the organizers' decision; and from the discussions, short as they were, it was possible to trace the trend of development in different parts of the world.

THE FLYWHEEL EFFECT.

At the conclusion of a conference such as this, there are those who say, "What have you told us? We knew all about these subjects before the meetings started." It is submitted that a conference may have a far wider influence than the mere revealing of new information. An idea—an improvement known to many individuals—may, by the authoritative approval and backing of a number of technical men, be pushed into practical application. By the very reiteration of a proposition, it may come to sound axiomatic, and then be translated into practice without causing any excitement.

RETROSPECT.

This retrospect has a threefold object. First, to crystallize some of the information laid before the conference; secondly, to criticize and discuss certain features of the papers and discussions; and, thirdly, to indicate the lessons to the gas industry which it seems to the writers may justifiably be drawn.

The subjects which are at the present day attracting the attention of those engaged in the gas industry may, it is suggested, be summarized as follows:

1. Co-ordination, centralization of control, and unification and its effect on the gas industry.
2. Solid smokeless fuel production—by high or low temperature carbonization methods.
3. Developments in industrial gas sales.
4. Utilization of surplus coke oven gas.
5. Developments in methods of gas production and by-product recovery.
6. The contribution of the gas industry to smoke abatement.

What had the World Fuel Conference to say on these subjects?

CO-ORDINATION, CENTRALIZATION OF CONTROL, AND UNIFICATION AND ITS EFFECT ON THE GAS INDUSTRY.

If it were necessary to express in a single word the main thought which lay behind the papers and discussions, it would be "rationalization." Time after time this word came to mind in a study of the papers. It covers the subject of this section. Rationalization has recently been aptly defined as "connoting the readjustment of industrial methods and organizations to changed or changing conditions—equally whether the changes be economic or arise out of advances in scientific technique—the end in view being the elimination of waste in every form and the attainment of the highest possible efficiency."

THE COKING INDUSTRY.

A striking example of the need for rationalization is to be found in the present position of the British coking industry. After the war, Germany, faced with the imperative need for industrial re-organization, and with a falling currency, took advantage of scientific progress, and by building large rapid-coking ovens cut her costs of coke production. France, with many of her collieries in ruins, rebuilt her collieries and coke ovens on modern lines. America, with a steadily increasing demand for her iron and steel, improved her technique of oven construction with each new installation. After the war, Great Britain was faced with coke production in a large number of small units, many of them worn out. With the slump which followed the post-war boom a number of ovens were let down. The coke oven owners had not, in many cases, the confidence to take this opportunity to reconstruct their plants in accordance with latest practice; and then, when the demand again came for coke, they were faced with the operation of uneconomic ovens. But during the past three or four years there has been an improvement of the position; and the importance of rationalization in the coking industry has been emphasized by the National Fuel and Power Committee. A well-organized modern coking industry will make co-operation between gas, coking, and steel industries not only mutually advantageous, but also essential for their development.

THE DAY OF LARGE UNITS.

Sir David Milne-Watson, in his broadcast address from London on "Planning the World's Fuel," said that one thing upon which the minds of all the delegates of the conference seemed made up was that the day of the small undertaking, whether coke, gas, or steel, is over, and that larger units are essential if the best results and the full advantages of our technical knowledge are to be obtained. In many industries, such as the steel and coking industries, it can readily be shown that larger units mean reduced cost. In the case of the gas industry, the evidence is not so easily obtainable. From the point of view of thermal efficiency and cost of gas production there are many small works, efficiently run and containing modern carbonizing plant, which compare favourably with much larger undertakings.

WHERE GAS AND ELECTRICITY DIFFER.

Herein lies an important difference between gas and electricity undertakings. A small electricity generating station almost invariably means a lower thermal efficiency. Thus in the analyses and summaries of the returns of fuel consumption for the generation of electricity in Great Britain for the year ended March 31, 1928, it is shown that fuel consumption per unit generated on stations making over 200 million units per annum averages 1·81 lbs.; with stations making 50 to 100 million units it averages 2·10 lbs.; with stations making 500,000 to 1 million units the fuel consumption rises to 7·05 lbs. per unit. An examination of published returns of the gas undertakings will show that many of the small gas companies are producing as high an output of gas per ton of coal as the larger ones, and are doing so at a reasonable cost. The reason for this is that a carbonizing plant is made up of a large number of small efficient units, each complete in itself. In addition to this, sudden fluctuation in load can be taken up from gasholders instead of direct from the carbonizing plant. In the case of the electricity generating stations, the larger units usually give lower fuel

consumptions; and seeing that storage of electricity is impracticable to any considerable extent, variation of load has to be taken up by the generating set direct.

THE JUSTIFICATION FOR GROUPING.

The main justification for the grouping and absorption of smaller undertakings lies in the advantages which may result from unification of control. Small undertakings cannot afford any technical supervision. Even the medium-sized undertakings cannot afford to finance research, nor can they afford the amount of technical supervision that is possible to the larger concerns. Again, with small undertakings the load factor is in many cases uneconomical, and they are not in the position to buy as cheaply as large ones. Nor can they afford to prepare their coal by blending, or to screen and grade their coke sufficiently.

CO-ORDINATION NOT CENTRALIZATION.

It is submitted that rationalization of the gas industry should involve, not the centralization of gas manufacture in a few super-stations, but the installation of intercommunicating mains between undertakings whose districts may be different in their requirements and their demands. This intercommunication would reduce the necessity for each undertaking having unnecessarily large amounts of stand-by plant in the form of holders or carbonizing plant. Into these mains might be added, where practicable, surplus coke oven gas—a subject which will be discussed at a later point in these articles. For such an arrangement to be effected, gas undertakings would have to be authorized to sell gas to each other. In addition, it would be an important step if groups of gas undertakings were themselves able to centralize and control the treatment of bye-products.

RATIONAL BYE-PRODUCT AMMONIA PRODUCTION.

An interesting suggestion towards rationalization of the bye-product ammonia problem was made by P. Parrish in his paper on "Some Technical and Economic Aspects of the Bye-Product Ammonia Recovery Problem," H 13. He showed that, whereas the largest bye-product works produces 25,000 tons of ammonium sulphate per annum, Billingham, according to the modified schemes propounded by Lord Melchett at the Adriatic Conference, will produce 360,000 tons per year. To compete with such an organization, Mr. Parrish urges that the recovery of ammonia at the majority of works should only proceed to the point of making either a concentrated gas liquor containing 15 p.ct. NH_3, or a solution of ammonium sulphate containing 40 p.ct. of $(NH_4)_2SO_4$. These concentrated liquids should be converted into ammonium sulphate of uniform quality at a central works.

By centralization of ammonia product works, mass production methods, and co-operation between a group of gas undertakings, it is difficult to see how any synthetic process can seriously compete with bye-product ammonia. A ton of bye-product ammonia can be made for £3 18s. It is highly questionable whether a ton of synthetic ammonia will ever be produced at this figure.

THE GAS INDUSTRY CANNOT STAND ASIDE.

It may be said that the gas industry has progressed so far very well without any unification; but it cannot stand still. If rationalization is taking place in other industries, the gas industry cannot afford to stand aside. Whatever may be the view of the industry itself, there can be little doubt that the consumer thinks of the gas industry collectively. The use of gas and the products of carbonization are now so necessary to the welfare of the community that the quality of the products of one undertaking has a material influence on the attitude towards the products of another undertaking. At the present time each is a law unto itself, there being no directive control except that voluntarily adopted. If a particular undertaking realizes that new methods have to be adopted (say) for the preparation of coke, in order to command a higher price, and to bring it in line with a better material produced in a neighbouring district, it has to bear the whole cost of such an improvement. This is sometimes impossible for a small undertaking, with the result that the small undertaking goes on selling bad coke at a poor price, while the good coke made in the neighbouring district is, to a greater or less extent, discredited because of troubles associated with the bad coke. If the small undertaking is absorbed by the large one, there is capital available to remedy the bad coke, and thus improve the general market situation. Even if two neighbouring undertakings make equally good products, there is in many cases competition to sell their bye-products, in the form of coke, tar, and ammonia, resulting in undercutting, whereas there should be co-operation between them, if they be regarded as units in one great industry.

RESEARCH.

The World Fuel Conference brought into prominence, with striking force, the importance of research work in the gas industry. Three important principles would appear to have been generally accepted.

1. The fundamental importance of technical research to the fuel industry.
2. The importance of fuller utilization of already existing knowledge available in different countries, in different industries, in different laboratories, and in recent and past literature.
3. The importance of unifying the nomenclature and standards with a view to more readily utilizing the experimental results obtained by others.

IMPORTANCE OF RESEARCH.

As regards research work, the gas industry in this country has passed through a somewhat unusual development. Until recent years the industry was self-contained. It trained its own men, depended upon its own resources, and had not the advantage of learning from the experience of other countries, because of the fact that the subject of the carbonization of coal was further developed in Great Britain than in any other country. The processes and plant were built up largely on experience and practical experiment. But during the past two decades, the industry, faced with the growing complexity and costs of modern industrial life, has realized the importance of systematic research on the technique of gas production and gas utilization. The growth of the gas industry throughout the world has led to important developments being made abroad which may have application in this country. The recent conference has shown that the gas industry can find to-day many points of interest and application from abroad.

THE CHEMIST IN THE GAS INDUSTRY.

Upon the present day attitude towards research in the gas industry, we may perhaps be allowed to quote the words of the President of the National Gas Council at another conference last May. "In no other industry has the advantage of chemical control been recognized more fully during the past few years than in the gas industry, and the steady increase in the efficiency of gas production has undoubtedly been due to the large increase in the number of chemists employed by gas undertakings. A natural result of this kind of control is that the industry is looking more and more to the research and investigations of chemists in order that its processes may be developed to give still more economic working in the future."

THE APPLICATION OF RESEARCH WORK.

The carbonization of coal and the production and treatment of gas are complex subjects. They call for a much wider application of scientific principles than most other industries. They make a greater demand on the scientist, if the same state of efficiency is to be obtained as is obtainable in other industries. Research should not be confined to the general subject of carbonization or the production of gas. Investigation is required in every branch of the industry, from coal preparation to the utilization of gas. Research is even required on the primary subject of the training of men for the industry. Still more attention must be paid to the best methods of utilizing research work. Those members of the gas industry who attended the conference will have realized that scientific research can be applied quickly, and important results and improvements made, if there is a real desire to do so. Too often is the research worker expected to apply the results of his work. Too often is the engineer

expected to develop the details of his own process. It is the business of scientific management to co-ordinate the work of the research man with the practical needs of the producer. More time and money are lost annually through lack of proper management and of co-ordination than through lack of ideas or inventive skill. The importance of co-ordination in connection with research work cannot be over emphasized. Mr. H. Hollings, in his highly important paper to The Institution of Gas Engineers last June, elaborated the importance of careful deductions from results, over and above the mere collection of data.

Fields of Research Work.

There are two great fields of research work in the gas industry. There is the prosecution of research work away from the actual process of gas manufacture, with the object of developing new methods of manufacture, of gas purification, and of improving the products of the carbonization process. Then there is the field in which the research worker examines the operating results being obtained in every-day processes, and from his specialized knowledge searches for ways and means of improving the efficiency of those processes, and, in addition, puts before those controlling the works the true significance of cause and effect. The World Fuel Conference, by reason of the information published, gives ample opportunity for this type of research work. Rationalization of the gas industry depends to a large extent upon the vigorous prosecution of both inventive and deductive research work.

Legislation and the Gas Industry.

There is a further aspect of this subject of rationalization which must be considered—namely, the present position of legislation governing the gas industry. As Mr. F. W. Goodenough pointed out in his paper to the conference, many of the laws controlling the gas industry date back eighty years. "If the householder and industry generally are to secure in full measure the benefits resulting from the widespread use of gas, it is essential that the industry should be freed from the cumbersome and useless shackles which restrict its full development, and that the control of this great public service should be based on modern needs and modern conditions."

For the rational development of the gas industry, there are certain alterations to legislation which are almost too obvious to be enumerated.

1. Gas undertakings should be allowed to co-operate with each other by buying and selling gas from and to each other, and by the joint working-up of bye-products.
2. Gas undertakings should be allowed complete freedom in the determination of prices of gas for domestic and industrial users, subject to the average price being the basis for the sliding-scale.

Other Limiting Factors.

It must be faced that legislation is not the only factor which limits the adoption of a different price of gas to industrial user and domestic consumer. In some of our large cities, the difficulties to be met with in any proposal for altering the method of charges for gas will be in connection with the opposition of those who consider that the small working-class consumer should not pay more for his gas than the large user. This is a difficulty of the same nature as whether or not those using slot meters should pay slightly more for their gas, in spite of the fact that the introduction of slot meters, while adding to the convenience of the consumer, puts up the cost to the gas undertaking. The experience and results of such undertakings as Sheffield and Birmingham, with their large industrial load, should be a sufficient indication that the development of a large industrial load leads to cheaper gas for all.

Legal Aspects.

One paper at the conference touched on an aspect which is little appreciated—namely, the legal considerations governing long-distance transmission of gases, by H. V. Lloyd-Jones. He indicates that before bulk transmission of gas on a national scale can be made practicable, nothing short of a complete re-shaping of the law relating to gas supply must be undertaken. All the large centres—in fact the bulk of the gas supply of Great Britain—are in the hands of statutory companies and local authorities, which, in exchange for the obligations of working under certain restrictions, enjoy a number of privileges, among which is a monopoly of the supply of gas within their areas. According to Mr. Lloyd-Jones, it is unlikely that Parliament would give power to an outside undertaking to supply gas within these statutory areas. While there are no similar obstacles to a private company supplying long-distance gas to non-statutory areas, there are indirect legal obstacles which, for practical purposes, would prove insurmountable.

As pointed out at a previous stage in this article, fundamentally different factors govern the cheap supply of electricity and gas. Therefore it is inconceivable that similar reorganization will ever be attempted for the gas industry as at present is being effected for the supply of electricity. All the protection the community requires in exchange for monopolistic conditions enjoyed by the gas undertakings can be obtained through carefully considered regulations laid down in the conditions of supply.

The Need for Freedom to Evolve.

The gas industry is perhaps in the best position of all the established industries to make full use of this lesson of the World Fuel Conference—rationalization. It is well established, successful, a public service having legislative protection and monopolistic conditions. It has satisfactory labour conditions; on the whole it takes no great financial risks. But, for its development, it is necessary that the legislation governing it should be such that it is free to extend and evolve, to improve and change in those ways which the changing economic conditions and the changing requirements of the community necessitate. If the gas industry be allowed to "adopt, adapt, and improve," it will continue to hold the enviable position as the one great public service which never fails.

[The second article of the series will appear next week.]

GAS IN THE FAR-EAST: CHINA.

By WALTER BUCHLER.

The use of gas is not yet widely known in China, and there are only three important gas-works operating on any large scale in that part of the world. Of these, the Shanghai Gas Company is the largest. The other two are the Hong Kong Gas-Works (Hong Kong and China Gas Company, Ltd.) and the Dairen Gas-Works operated by the South Manchuria Railway, which is a semi-official Japanese Government concern. Shanghai, which is the centre of China's foreign trade and is the most important industrial manufacturing city in China, is the largest user of gas for all kinds of purposes. In spite of intensive competition from an efficient electricity concern which supplies the whole town with electricity, the public, both Chinese and foreign residents, are using more gas; the demand growing from year to year. In 1927, the amount sold to private consumers in Shanghai was 502,204,400 c.ft.—an increase of 28,633,000 c.ft. over 1926.

It is no easy matter to ensure perfect cleanliness in a household with Chinese servants, and the foreign housewife in China has to be constantly supervising her Chinese cook and other servants, to see that the work is done properly. The use of gas for cooking and heating purposes will therefore continue to increase; and with the growing industrialization of the country, the demand for gas is bound to spread to other important centres in China. The present three gas-works in China have also to cope with an ever-growing demand for gas for industrial purposes. China has ample supplies of cheap coal, suitable for making gas, and there is a steady demand for coke, tar, desiccated tar, tar distillate, pitch, and sulphate of ammonia, considerable quantities of which are also imported.

Exporters and manufacturers of gas stoves, grates, appliances, and fittings will find good scope for selling their specialities in the Chinese market. There is already a considerable demand, and imports are by no means negligible, as the following statistics show.

There is also a growing demand for all kinds of cooking utensils, as well as for enamelled ironware and hardware, imports of which into China during 1927 were valued at £19,000 and £143,000 respectively. It would be well worth while for larger firms to have their own branches in China, preferably in Shanghai, appointing sub-agents in Hong Kong, Hankow, Tientsin, Dairen, Harbin, and other important centres. In this case, a Chinese selling organization would be necessary, but that is not difficult to arrange. A "compradore" (sort of go-between) would be engaged either through an advertisement or preferably through personal recommendation. It is for him to introduce business from Chinese dealers, and he guarantees a percentage (usually 25 p.ct.) of the value of orders—namely, that they are taken up and paid for. In return, he receives a commission on all orders taken, and a small salary to cover salaries paid by him to his Chinese staff (shroffs—salesmen and collectors—and the usual clerical staff of an office).

Imports into China of Gas Fittings, Stoves, and Grates.

GAS FITTINGS.

From—	1924.	1925.	1926.	1927.
	£	£	£	£
Great Britain	7,500	10,800	17,000	..
Germany	21,500	22,600	44,000	..
U.S.A.	10,000	9,100	4,980	..
Total, including others	46,300	57,600	78,160	40,000

STOVES AND GRATES.

From—	1924.	1925.	1926.	1927.
	£	£	£	£
Great Britain	21,000	12,800	9,600	..
Germany	40,000	23,000	54,900	..
U.S.A.	12,300	13,300	13,200	..
Total, including others	95,000	68,400	111,000	79,000

During recent years, Chinese merchants have been—and they still are—trading more and more directly with exporters and manufacturers overseas, and there is no reason why such direct business should not be encouraged, as long as payment is assured before goods leave the port of shipment. The continual disturbances—Chinese "wars" and political upheavals—about which so much has been and is heard should not deter the exporter here from entering the Chinese market, for such happenings—at least in China—do not preclude trade from proceeding on its usual course.

BRITISH ROAD TAR ASSOCIATION.

FIRST ANNUAL GENERAL MEETING.

The President Describes the Aims and Objects.

In connection with the first annual general meeting of the British Road Tar Association, which took place at the Hotel Cecil, Strand, W.C., on Tuesday of last week, there was a luncheon, at which Sir DAVID MILNE-WATSON, LL.D., D.L. (the President), gave his address. After remarking that he felt his privilege to be the greater, not only because in its first year of existence the Association has made good progress towards attaining its more immediate aims, but also because it has shown itself to be animated by a desire to play its part in a wider sphere of usefulness, Sir David went on to express the view that, in the promotion of British industry, nothing but good can result from the formation of Trade Associations such as this. These Associations enable knowledge and resources to be pooled, needless and costly over-lapping to be eliminated, and collective action to be taken; and they tend to the cultivation of a much broader outlook. Proceeding to discuss the affairs of the Association, Sir David said:

ASSOCIATION TO BE CONGRATULATED.

I am pleased to think that the Joint Tar Committee set up in 1924 to represent gas tar producers, coke oven tar producers, and tar distillers was animated not only by the desire to further the individual interests of its constituents, but also to encourage British industry. The Association which came into existence a year ago as the result of the efforts which had preceded it will, with the increasing facilities at its command, be enabled to continue the work with greater intensity. In reviewing our first year's work, I have nothing of a spectacular nature to bring to your notice. I think, however, that the Association can be congratulated upon the steady progress which has been made.

In the first place, I feel that the position of tar as a road making material in this country has been greatly strengthened by our collective efforts. ["Hear, hear."] Indeed, I wonder how in the past we were able to carry on at all without the British Road Tar Association. I am satisfied, also, that the fusion of the three main interests represented by the Association for the purpose of joint working and propaganda has been of material benefit to each; and I am confident that the continuance of the work so well begun in a spirit of mutual confidence and understanding will go far towards achieving the ideals which we are seeking.

IMPROVING THE QUALITY OF TAR.

The Association started its career with two principal objects:

1. To improve the quality of tar for use in road construction throughout the country.
2. To make known the unque qualities of British tar for all purposes connected with road making.

With regard to the first step—namely, that of endeavouring to improve the quality of tar—the Association can congratulate itself on being successful in obtaining the approval of the Ministry of Transport to a revision of the Nos. 1 and 2 Road Board Specifications for Tar. I am informed that this has been accomplished without making it impossible for dehydrating plants to supply tar to the No. 1 Specification.

While this is a step in the right direction, I would urge all tar producers and distillers to regard the Association's specifications as a minimum standard from which further advances will have to be made as time goes on. The march of science includes road making materials in its train; and while in the past the necessity for scientific control of their manufacture was not of paramount importance, the rapid developments that have since taken place will not permit of any cessation in your endeavours to bring about still further improvements.

Much also remains to be done by the Association in the application of tar for various road uses. A good deal of the criticism which has been directed against tar arises from the incorrect methods of application which have been adopted in its use. It will be the duty of the Association to give serious consideration to this question; and it is hoped that ultimately improved methods for the application of tar, embodied in scheduled instructions, will be made available.

SUCCESSFUL EXPERIMENTS.

That there is room for improvement has been amply proved by the practical experiments carried out by the Association. I would particularly refer to an experimental stretch of tar-macadam laid in one of the busiest roads leading out of the Metropolis, over which about 25,000 tons of traffic passes daily. This stretch has now been down for twelve months; and it is

gratifying to report that the Engineer and Surveyor has expressed his satisfaction with the test. It is even more gratifying to know that the materials used in its construction were British throughout. This clearly proves that, under correct manufacturing and laying conditions, British materials are capable of making roads which will in every way meet modern traffic conditions. ["Hear, hear."] I would also add that, in these days of alarming skidding fatalities, the protection of the road user is of vital importance. A properly constructed British tarred road has proved to be completely immune from this danger; and it is to be hoped that the authorities will recognize this fact.

PROPAGANDA.

With regard to the second point to which I have referred—namely, propaganda—I would particularly draw your attention to the many favourable notices that tar has received through the medium of the Technical Press. Granted that the Association's publicity campaign has been partly responsible for this, I cannot help feeling that our endeavour "to bring light to bear on dark places" has been responsible for a considerable change of thought regarding the merits of tar for road making. Prejudice still exists in many quarters against tar; but it is pleasing to note that the methods adopted by the Association are rapidly eliminating this. The friendly relations which have been established with the Ministry of Transport, the Ministry of Agriculture and Fisheries, the Association of Fishery Boards, the National Federation of Granite and Roadstone Quarry Owners, and other authoritative bodies, is a pleasing feature. Conferences have been arranged from time to time, and have been of the utmost value in creating the right atmosphere and preparing the way for further advances to be made.

MORE MEMBERS WOULD MEAN LARGER FUNDS.

The Association are mindful of the necessity of reviewing the general propaganda methods undertaken by them for furthering the use of tar. Various proposals are at present under consideration, all of which are designed to cover the ground more completely. Members will appreciate, in this respect, that much more could be accomplished with larger funds; and I should like to suggest that each member should use his personal influence in obtaining additional members for the Association.

DISTRICT TAR BOARDS

I am glad to learn of the progress made in the setting-up of District Tar Boards. I am informed that, with one or two exceptions, these are now in being. The linking-up of the country in this manner will, I feel sure, be of considerable assistance to the Association in the furtherance of its work, and will enable the Boards to study their local requirements.

The gas and coke oven industries are responsible for the production of approximately 2,000,000 tons of tar annually which is derived from the carbonization of coal. Tar is a valuable bye-product of these industries, and its contribution in many ways to the well-being of the community at large has been of incalculable service. It can render an even greater service if the powers that be will encourage its fuller utilization for the roads of this country.

WHY IMPORT?

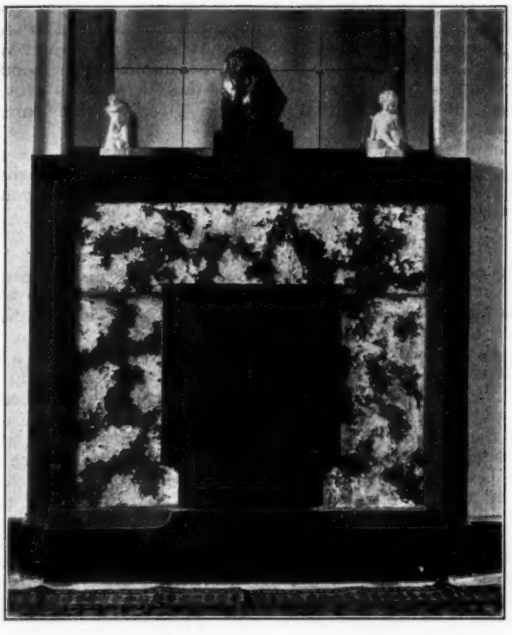
We spend £45,000,000 per annum on the making and upkeep of our roads. That figure shows conclusively that every ton of British tar could be utilized on the roads. Why, therefore, should it be necessary to import products for road-making purposes, the value of which is in no way superior to that of tar. Every year we spend about £1,200,000,000 on imports. Admittedly there are a large number of things which we cannot produce in this country, so that our bill for imports must always be large; but surely every effort should be made to reduce that sum by using home products wherever and whenever possible. I do not go too far when I say that the whole of the materials necessary for the carrying-out of the national highways schemes of the country could be obtained in the British Isles; and if our national resources in this respect were fully utilized, additional employment would be found for thousands of men, and many British industries would be greatly benefited.

DESIGN IN INDUSTRY—WITH ESPECIAL REFERENCE TO GAS FIRES.

[Extracts from a Paper read by Sir LAWRENCE WEAVER, K.B.E., F.S.A., Hon. A.R.I.B.A., at the York Conference of the "B.C.G.A." on Oct. 23, 1928.]

You have heard the eloquent and thoughtful address of your President on the broad aspects of beauty in its relation to industry and commerce. In 1924 you gave me the privilege of addressing you at the Liverpool Conference on the same subject, and my remarks, though general, were illustrated by points of some topical interest at that time. When you did me the honour to ask me to speak here, I felt it gave me the opportunity to assemble the result of inquiries which I have been making over a considerable period with regard to the design of gas fires, the design of their settings, and, what is of real importance, the attitude of the architectural profession to gas fires. This inquiry it has been a pleasure to make, not only because it is part of the professional service I am

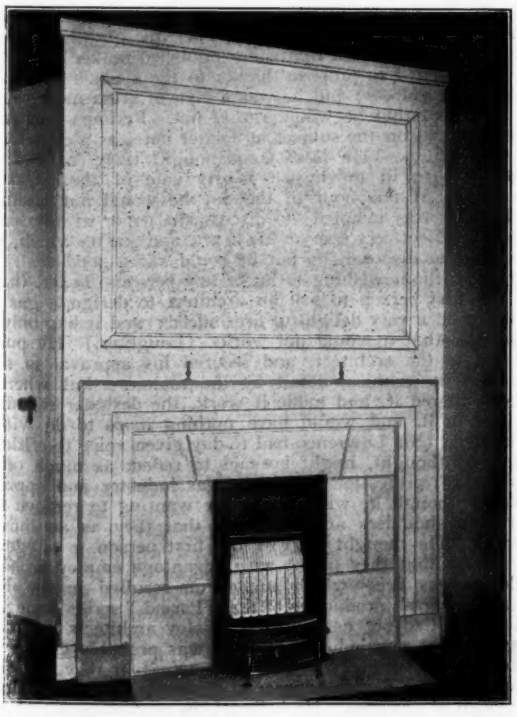
RAISED FIRE WITH BRONZE DOORS OPEN.



A Raised Fire, with Folding Doors, designed by Mr. P. Morley Horder in collaboration with Mr. Cyril G. Davis.

privileged as a Director of the London Press Exchange to render to your Association, but also because of the intrinsic interest of the subject.

As President of the Design and Industries Association, a post I have held for three years, and also as the lately elected President of the Architectural Club, I am brought into continuous and intimate touch with all sorts of people who are interested from many points of view in the design of things of common use. There has been no time during the thirty years of my business life that I have not been actively concerned in these problems; and I hope the material I have gathered, and the suggestions that I shall make, will be of some service to the industry. If you at all commend them, I can carry into effect tentative arrangements I have made for the publication of appropriate parts of this address in the Architectural Press, and thereafter their re-printing in book form with sundry added matter—the purpose being to stimulate the interest of the great profession of architects in the use of gas fires in new buildings.

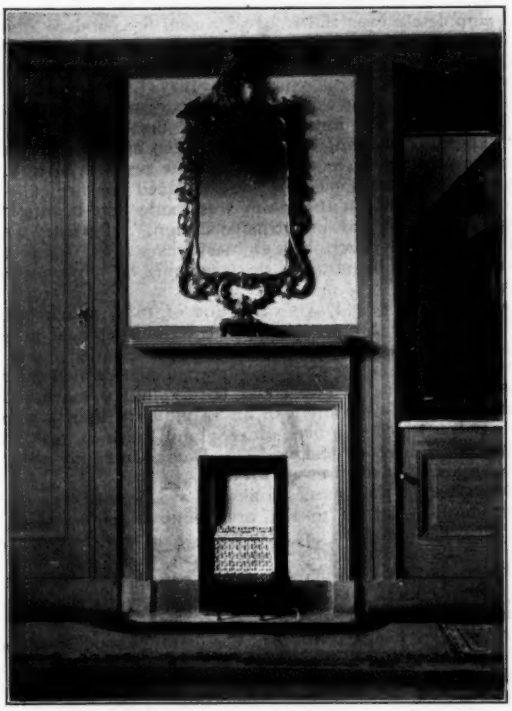


A Surround in Hopton Wood Stone by Mr. Edward Maufe.

I cannot help feeling that the gas industry as a whole is not quite fully aware of the importance of securing the full and convinced and continuous support of the architectural profession, or, at any rate, has not succeeded universally in doing so. If you once satisfy the eminent architect Mr. "A," or his Royal Academician colleague Sir "B. C.," or the young and rising Mr. "D," you have opened the door for gas, not to one house, but to dozens, and perhaps to many blocks of flats, which means hundreds of gas fires and a permanent increase of consumption of your product. But in order that these architects and their thousands of colleagues may be convinced that gas is a proper thing to instal, it is imperative that they shall be satisfied that, in the matter of design, which is to them of high importance, they have appliances acceptable to their taste. An architect friend wrote to me:

> "I have never put a gas fire into a house, although my clients have very often done so, after I have gone, and they have merely adapted what I had suggested as an open fireplace, which I do not think is an ideal thing to do at all."

Interest in design of gas fires has been placed by representatives of gas companies on the shoulders of the manufacturers. I have had the advantage of discussing the question with prominent and typical manufacturers. It may or may not sur-



A Bedroom Design by Sir Giles E. Scott, R.A.

prise you to learn that they put the blame on the gas companies for the present state of affairs. They say they have spent large sums in preparing designs and patterns of inset fires, which ought, in their opinion, to satisfy all reasonable desires in relation to design, but that the response to their effort in the matter of sales, which is the real test, tends to discourage further development. I am told—with what truth I do not pretend to estimate—that there are many gas showrooms in which not a single inset fire of good design is exhibited or commended to the public, and that many gas companies make no organized attempt to show the sort of gas fire which is likely to interest an architect. They do not try to get, or at least do not succeed in getting, the architects into their showrooms, even if they have the right sort of goods to show.

I know full well that the self-contained fire is an exceedingly important element in your business, for two reasons: Where gas is being installed in place of, and in succession to, a coal fire, it is far less trouble and far less expense to employ the self-contained type than to tear out the coal grate and begin all over again. The householder, converted from a coal fire to a gas fire, wants to make the change with the minimum of mess and expense. There is, moreover, the overwhelming financial advantage that the consumer can select and hire from the company self-contained fires of many types, whereas this cannot be done with the inset fire. It is only eighteen years ago that the first inset fire was put on the market, and eighteen years is a very short time in which to convert so conservative a profession as the architect's. There linger in their minds

the memories of gas fires of the 'eighties. They were made, it must be admitted, to designs both fearful and wonderful. I have amused myself, though sometimes with a shudder, in going over catalogues of that decade; and gas fires of that type still survive in economical homes. It is not so long ago that I expelled a fire that had silky asbestos tufts interspersed among cast-iron radiants in a frame of contorted ugliness.

PROGRESS IN GAS FIRE CONSTRUCTION.

I have been so fortunate as to get hold of the 1910 catalogue of Wright's gas fires, which, as the preface states, opened out a new chapter in gas fire history, and, I add, especially in relation to the proper architectural treatment of a gas fire. As early as 1898 the Welsbach Company introduced the Kern tubular radiant, set in a small independent grate. A Welsbach catalogue of about 1908 shows this type of fire, which remains practically unchanged to-day, and for that reason hardly comes within the scope of my paper.

In 1905 Wrights introduced the single vertical columnar radiant, to the perfecting of which Mr. H. James Yates has devoted so much inventive thought. The new radiants made it possible to get rid of the front bars that had held the old radiants in position, and called for no more than a thin clip. This reform, in conjunction with Mr. Yates' invention of the injector-ventilator and the adoption of the new type of flue, amounted to a revolution in gas fire design. In 1910 Wrights not only created a new series of patent "N.V." fires which fitted completely over the front of a coal fire, and so removed the impression that the gas fire was merely an addition and an afterthought, but they also adapted the "N.V." as an interior or inset gas fire, which type they had introduced two years before. This development incorporated the "Thermo" fire front, which was introduced for the first time in 1909. By the "Thermo," heating was concentrated on radiation, and a preponderance of convected heat became ancient history. In the same catalogue appears a self-contained gas fire called the "Wizard" for which the claim was made that it was "of a singularly artistic and unobtrusive design." Perhaps we can hardly accept that description eighteen years after it was made, but it is true that it marked a great advance on what was available at the time.

Looking back to a Davis catalogue of 1885, which followed the International Smoke Abatement Exhibition held at South Kensington, at which the Davis Company obtained the highest award, one sees all manner of gas appliances which have disappeared from use. You could hardly find a more striking example of the development of art in industry than a comparison between the Davis fires of 1885 and those of 1928, which reach a high level of design. The Davis Company went into the business of inset fires in 1913.

I observe that the gas fire makers have, in one respect, done a considerable service to the architectural profession. They have striven to produce gas fires of a decorative character, suitable to various historical styles of decoration. You may have Jacobean or early Georgian or Adam gas fires, or fires of perfectly simple form which take their place inoffensively in any scheme.

Mr. Walter Tapper, A.R.A., the distinguished President of the Royal Institute of British Architects, has given great thought to the settings of gas fires. There are a good many possible alternatives. One of them touches the question of the vertical plane in which the gas fire is set. Examples designed by Mr. Tapper show the variation which is possible, beginning with an interior flush with the front of the mantelpiece, and others going back to a moderate or a considerable depth with splayed surrounds. The deep-set fireplaces are rather less efficient as heating units; but economy in consumption is not always a primary necessity. Another series of admirable settings has been devised by Mr. H. Austen Hall. The examples devised by Mr. Darcy Braddell are representative because, not only do they show good settings of modern inset fires, but also several instances of the adaptation of old coal grates to the use of gas. The insertion of asbestos radiants in old coal grates is not an economical proposition in respect of consumption, and may also have hygienic disadvantages.

ARCHITECTURAL BEAUTY IN GAS SHOWROOMS.

I now take a point which is germane to any discussion about architects in relation to gas fires. When I started this paper, I had in mind to devote one section of it to the importance of the lay-out and design of gas company showrooms, but what I had to say about gas fires themselves has developed so much under my hand that I should weary you unduly if I embarked on a detailed disquisition about showrooms. Let me say, however, that I attach great importance to the movement, which has been so much stimulated by the writings of Mr. Cyril Davis. If I am right in supposing that the goodwill of the architect is of large and increasing importance to the gas industry, then it is important also that gas showrooms shall exhibit an architectural amenity that will make it a pleasure for the architect to visit them himself, and, what is more important, to make a practice of taking his clients with him. The Gas Light and Coke Company, in their splendid showrooms at Horseferry Road and Kensington, and by seeking the co-operation of such distinguished architects as Mr. Walter Tapper and Mr. Austen Hall, have established in London a very high standard; and I know that in various provincial centres no less attention has been given to this important question.

I need say no more now than to urge the importance of arranging that the settings for gas fires in showrooms shall be designed by the best architects whose co-operation you can secure.

SALESMANSHIP.

On one related point I should like to make a criticism. In the course of preparing this paper I have visited the showrooms of several gas interests. I have been impressed by the evidence of an increasing attention to the design of gas fires, though I think much remains to be done in striking a more modern note. I have been depressed by what seemed to me a lack of effective salesmanship. The assistants have been invariably courteous, but they do not seem to be aware of the very marked differences that exist between the various patterns exhibited, and were not ready with much helpful advice as to why I, as a potential buyer of a gas fire, should have one type rather than another. Many of them did not appear to see that there is, for example, a fundamental difference between the self-contained fire and the inset fire, which ought to be explained. I occupied myself with asking questions, to which I already knew the answers, to see if they knew them. They obviously should have known them better than I did, but few of them had any answer at all. They were, indeed, rather puzzled by my questions.

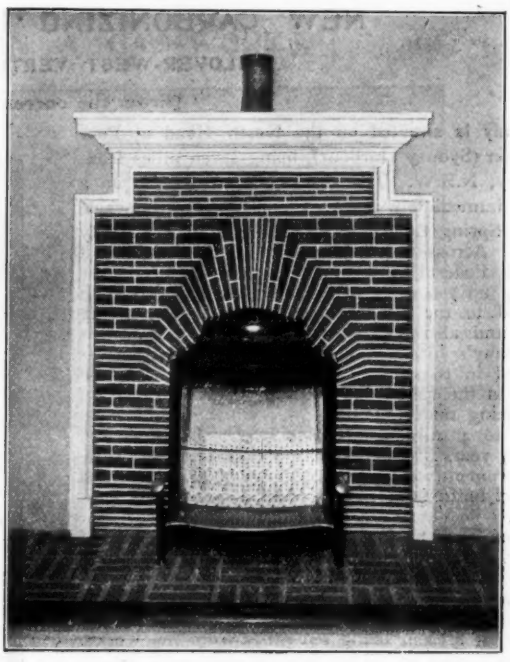
I have no doubt, however, that this matter is engaging your attention. I am sure that when the Advisory Committee of the Board of Education on Salesmanship gets down to its work, under the highly skilled direction of Mr. Goodenough, a stimulus will be given to the art of salesmanship in all branches; and this stimulus will, I know, secure an enthusiastic reaction from the gas industry.

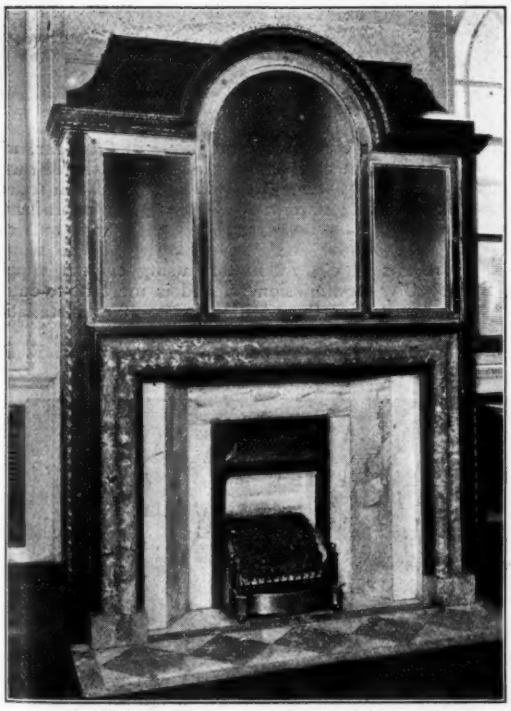
THE LESSON.

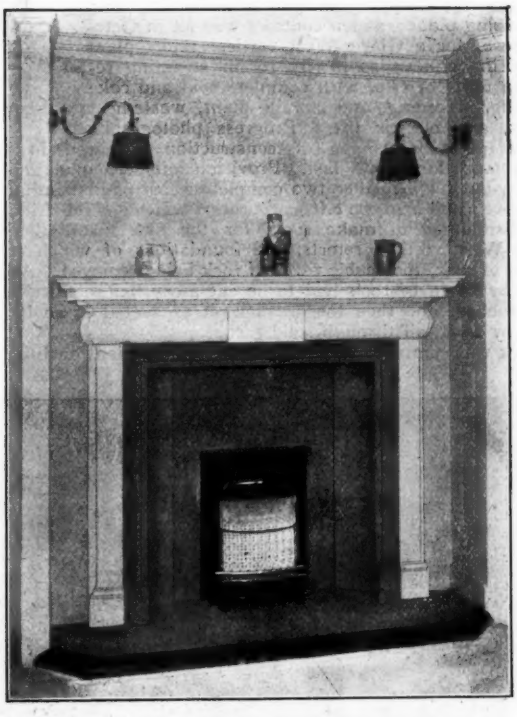
From all the considerations brought before you in this paper, I think two main points emerge: First, that both wings of the industry interested in gas fires—namely, the sellers of gas and the makers of appliances—should co-operate in raising the level of gas fire design and in devoting vigour to the marketing of appliances of improved design. Secondly, that a selling campaign should be undertaken among architects, so as to ensure that they shall not, as in the past, turn first to coal and only secondarily to gas, but that they shall turn primarily to gas as the real solution of smoke abatement, labour saving, and controlled heating, with the assurance that they can secure these particular advantages without loss of artistic interest in the rooms so equipped.

VOTE OF THANKS.

Mr. F. W. GOODENOUGH (Chairman of the Executive of the "B.C.G.A."), voicing the thanks of the gathering to Sir Lawrence Weaver, said that a distinguished maker of gas fires had been invited to propose thanks to the speaker for his extremely fine address; but he was a man of great modesty, and had intimated that he would rather not. Perhaps they might have his views on the subject at a later date, as a contribution to their records. He (Mr. Goodenough) therefore had very great pleasure in moving a hearty vote of thanks to Sir Lawrence. At this hour of the day he would not attempt—much as he was tempted—to discuss the paper at any length. It was a subject very dear to his heart, and one on which, were there time at disposal, he felt he could say a good deal. He thought, without wishing to make any personal boast, that he was the first person to ask an architect to design a gas fire. He designed a very delightful fire indeed; and it had only one drawback—that it would not work. [Laughter.] He pointed this out to the architect, and secured his approval to slight alteration in technical detail by the makers; but when the makers altered it, and made it work, the designer repudiated his part in it, and would have nothing more to do with it. [Laughter.] Sir Lawrence had to-day given voice to criticisms which, he thought, might be said to reflect as much on the architectural profession as on the gas industry and appliance makers; though he was in no way wanting to remove from their own shoulders any criticisms that they as an industry deserved. He thought he was the first person to suggest to the makers that they might with advantage employ architects to design gas fires—which suggestion resulted in the Richmond Company's production of the "Period" series some years ago. They had not neglected to employ architects to produce designs in the gas industry; but it was probably due to lack of further encouragement that to some extent they had failed hitherto to take a greater interest generally as a profession in the design of gas fires. He believed the profession would probably take a much greater interest in this subject when something of the address was printed in the architectural Press, and







FOUR EXAMPLES OF THE WORK OF MR. WALTER TAPPER, A.R.A., TO BE SEEN AT THE HORSEFERRY ROAD SHOWROOMS OF THE GAS LIGHT AND COKE COMPANY.

was printed even more fully for direct distribution to every architect in the country. They had with them that morning Mr. Michael Tapper, the son of Mr. Walter Tapper, the esteemed President of the Royal Institute of British Architects. Mr. Tapper brought his father's great regrets that, owing to a call to Dublin, he was not himself able to be with them.

Mr. MICHAEL TAPPER, seconding the vote of thanks, remarked that the paper had been extraordinarily interesting. They all owed Sir Lawrence a deep debt of gratitude for telling them his views and giving them an outline of the opinions of architects on this matter. With most of what he said, he (the speaker) most cordially agreed, though he must take up the cudgels on one point. He did not dispute that architects were to some extent at fault, but he thought that the manufacturers of gas appliances were also to blame. In many ways the manufacturer of gas fires was a man of vision, but when one talked to him about gas fires and the design of them, he explained the limitations of width and the limitations of height, and so on, until the result was that it was practically impossible to design a gas fire that was correct. He (the speaker) certainly thought that architects and manufacturers should get together, and produce something that would serve the need outlined by Sir Lawrence Weaver. The inset fire, he considered, was the only one with any attraction at all. The fire which merely replaced a coal fire was simply a compromise.

Sir LAWRENCE WEAVER, replying, said there was no doubt a great deal in this difficulty of getting the designer—be he architect or not—and the manufacturer to sit down with their arms round each other's necks, as they ought to do, in order to get a compromise between the practical requirements of the gas fire—which were essential—and the æsthetic requirements of the architect. He did not really think the divergence could be so enormous as it would appear to be to some minds. There were many designs of gas fire which would give the architect that interest which should stop him from installing coal fireplaces.

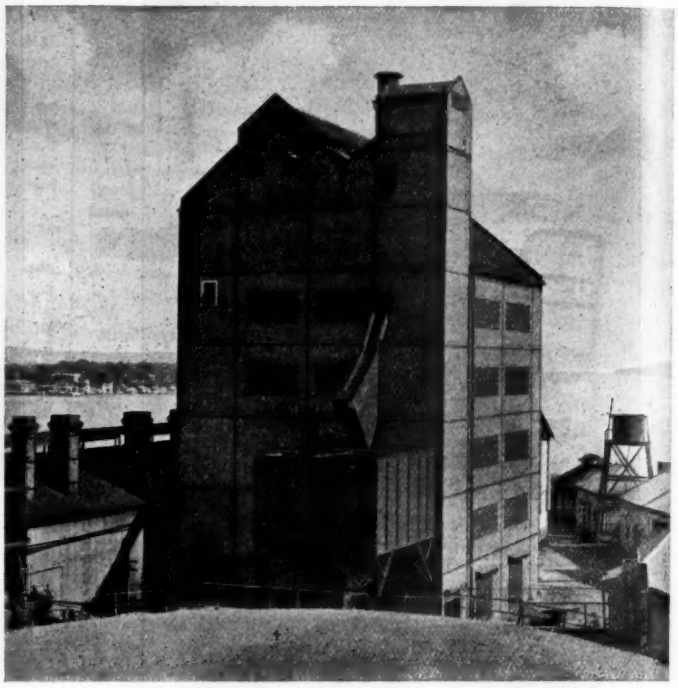
NEW CARBONIZING PLANT AT MANLY, N.S.W.

GLOVER-WEST VERTICAL RETORT INSTALLATION.

[From the current issue of "West's Gas."]

Manly is situated on the North Head of Port Jackson (Sydney Harbour), being seven miles from Sydney, N.S.W. The gas-works are located on a point immediately inside The Heads, on one side being Spring Cove, and on the other Little Manly Cove. Across from the works looking south-east is the Federal Government Quarantine Station—taking up 700 acres of uncultivated land, which if opened to the public would make ideal building sites and also add many consumers to the Gas Company's total. The Manly Gas Company was formed in the year 1884, and commenced operations in the same year—the first year's output of gas being under 150,000 c.ft., which in 1927 has risen to 4 million c.ft. per week. For the first twenty years of the Company's existence, very little advancement was made, but the popularity accorded to surf bathing in 1907 marked a new era of progress.

From 1907 to 1927 the output of gas increased from 22,745,000 c.ft. to 219,099,000 c.ft.—*i.e.*, 863 p.ct. increase. In 1926 thirty miles of high-pressure main was laid, making possible the supply of gas to outlying districts—the furthermost consumer at present being ten miles from the works. The total area served by the Company is 7·5 square miles, which will increase to approximately 20 square miles on the completion of the Harbour Bridge.



In 1926 the Company decided to modernize their carbonizing plant; and a contract was let in October, 1926, for a Glover-West vertical retort plant comprising sixteen 40 in. by 10 in. steaming retorts in units of two, with complete coal and coke handling, screening, and storage plant, waste-heat boilers, and electric lift. Progress photographs of the plant in course of construction appeared in the "JOURNAL" for Feb. 1 last. Provision has been made in the new lay-out for a further two complete retort plants similar to the above; and a 40,000 c.ft. carburetted water gas relief holder was dismantled to make room for the new installation of Glover-West vertical retorts, the foundations of which were cut out of rock, 1000 cubic yards of rock being removed. About 12 ft. by 20 ft. of rock had to be cut away before floor level was reached, and then the breaker pit excavated to 20 ft. by 20 ft. by 20 ft. all through solid rock.

Work was commenced on the erection of the plant on July 20, 1927, and gas-making commenced on July 2 of this year, when the old plants were put out of commission. All the refractory materials of the settings were obtained from Australian sources.

The steelwork throughout was of Australian manufacture, as also were the cast-iron worm casings, the steel and cast-iron foul mains, and the producer mountings. The plant is operated by means of electric motors using current supplied by the Sydney City Commissioners, and is most up-to-date in every respect, being a worthy addition to the many installations operating at home and abroad.

F. E. B.

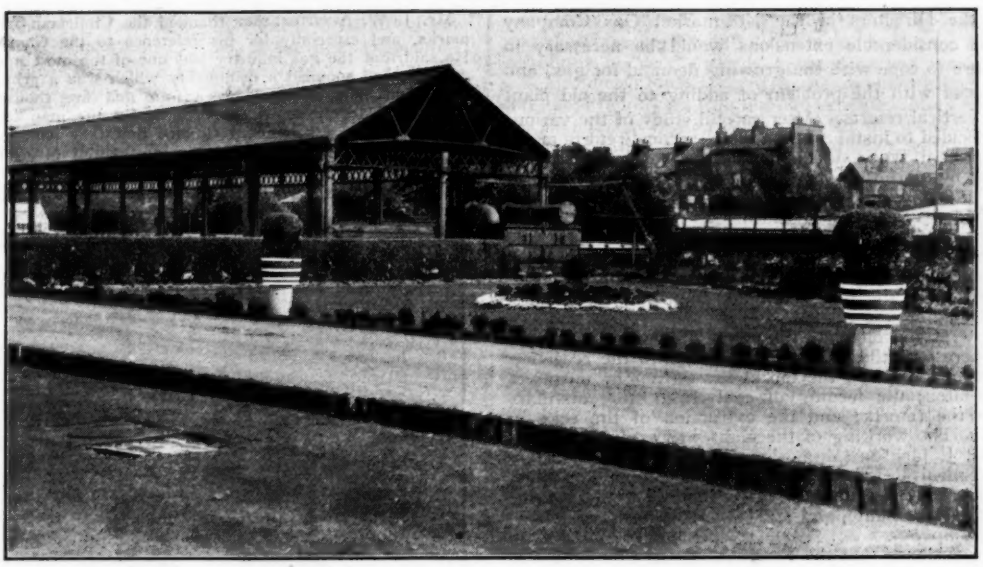
A GROUP OF ALDERMEN, COUNCILLORS, AND GAS OFFICIALS PHOTOGRAPHED AT THE OFFICIAL INAUGURATION OF THE NEW GLOVER-WEST INSTALLATION AT THE WORKS OF THE MANLY GAS COMPANY ON AUG. 3.

In the centre of the group are Alderman Kierle, Mayor of Manly; Mr. Paxton, Chairman of the Company; Mr. West, President of West's Gas Improvement Company, Ltd.; Mr. Frank E. Bird, Manager of the Australian Office; and President Corkery, of the Warringah Shire Council.

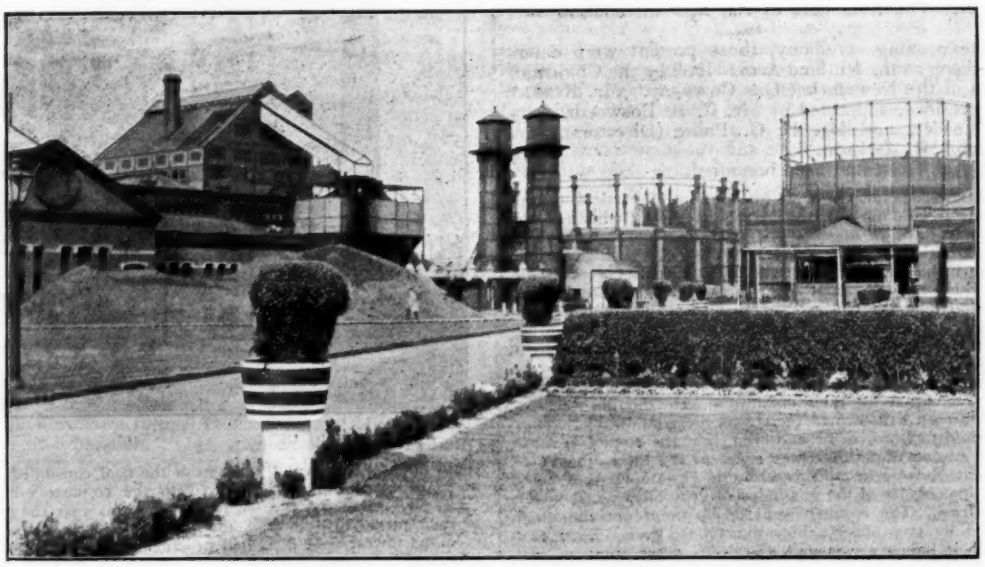
Institute of Fuel.—The annual two days' Conference of the Institute will be held at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, W.C. 2, on Wednesday and Thursday, Nov. 21 and 22, commencing each day at 10 a.m. On Wednesday morning, the President, the Rt. Hon. Lord Melchett, P.C., LL.D., will deliver his address; and in the evening there will be the annual dinner, at the Connaught Rooms.

North of England Gas Managers' Association.—A meeting of the Auxiliary Section of the Association will be held at the Howdon Works of the Newcastle-upon-Tyne and Gateshead Gas Company, on Saturday, Nov. 24, at 2 p.m. The chief item on the agenda is the address of the Chairman, Mr. G. E. Anderson, B.Sc. Following the business meeting there will be an inspection of the Howdon Works, of which Mr. Anderson is Manager.

FLORAL CULTIVATION IN A GAS-WORKS.



THE GARDEN GAS-WORKS AT READING.



A GENERAL VIEW OF THE ATTRACTIVE LAY-OUT.

AN article appeared in the "JOURNAL" some weeks ago in which it was remarked that on various occasions our pages have borne testimony by illustrations to the fact that luxurious vegetation will thrive in and around a gas-works; and we are now in the position of being able to give this pleasing evidence. It must, of course, be admitted that the attractive appearance in this respect of many gas-works is largely the result of fortuitous circumstances. In some cases the necessary space is not available, and in others maybe vegetation would not be likely to thrive, through no fault of the gas-works. There are, however, numbers of beautiful gas-works which are as pleasing to work in as a model village; and the two photographs reproduced here (for which we are indebted to Mr Douglas H. Helps) show that the Reading Gas Company's works are among the best The photographs were taken by Mr. R. H. Sayers, of West's Gas Improvement Company, on the occasion of the visit to the works of Mr. Kataoka, Engineer of the Osaka, Japan, Gas-Works.

"L. & N." Coal Distillation, Ltd.—On Saturday last, the Executive and delegates of the National Union of Seamen, together with representatives of the Notts. Miners' Industrial Union, visited the low-temperature carbonization plant erected by "L. & N." Coal Distillation, Ltd., at the New Lount Colliery, near Ashby-de-la-Zouch. This unit, which has been in operation for some weeks, was designed on the basis of a daily throughput of 100 tons, but it has beeen found possible to treat about 150 tons a day. The heat required for carbonization of the charge is provided by the combustion of producer gas, the production of this gas requiring an amount of coal equivalent to about 6 p.ct. of the charge. Each ton of coal, it is stated, yields about 14 cwt. of semi-coke and about 20 gallons of crude oils. At Ashby the coke is being briquetted into ovoids, but it is also available for use in the pulverized form. Four more retorts, bringing the capacity of the works up to about 750 tons a day, are to be erected at Ashby. The Directors of the "L. & N." Coal Distillation, Ltd., announce that they have disposed of the patent rights in the "L. & N." process in Tasmania to the Australian Shale Corporation, and have purchased sufficient shares in the latter to give them a controlling interest.

NEW "W-D" INSTALLATION AT NEWMARKET.

Inauguration Ceremony on Oct. 22.

In 1927, the Directors of the Newmarket Gas Company realized that considerable extensions would be necessary in the near future to cope with the growing demand for gas, and they were faced with the problem of adding to the old plant or adopting vertical retorts. After careful study of the various types, they decided to instal a bench of six vertical retorts of the Woodall-Duckham type, sufficient to increase the maximum output of gas by more than 50 p.ct.

The new plant, which was formally opened on Monday, Oct. 22, provides an increased yield of gas per ton of coal carbonized, conserves ground space, reduces labour costs, and vastly improves conditions of working. Moreover, it gives a higher efficiency of carbonization and a better quality of coke: and incorporated in the new plant are improved methods of grading and loading the coke.

The visitors at the opening ceremony witnessed the whole process of operation—the unloading of coal into the receiving hopper; its transference to the top of the setting by means of a bucket elevator; the feeding of coal from the auxiliary hoppers into the retorts; and the extraction of the coke at ground level. The working of the plant was explained in detail by Mr. G. J. Jackson (Managing Director of the Woodall-Duckham Vertical Retort and Oven Construction Company, Ltd.), Mr. J. H. Troughton (Manager and Secretary of the Newmarket Gas Company), and Mr. Robert Stephenson (Chairman of the Company).

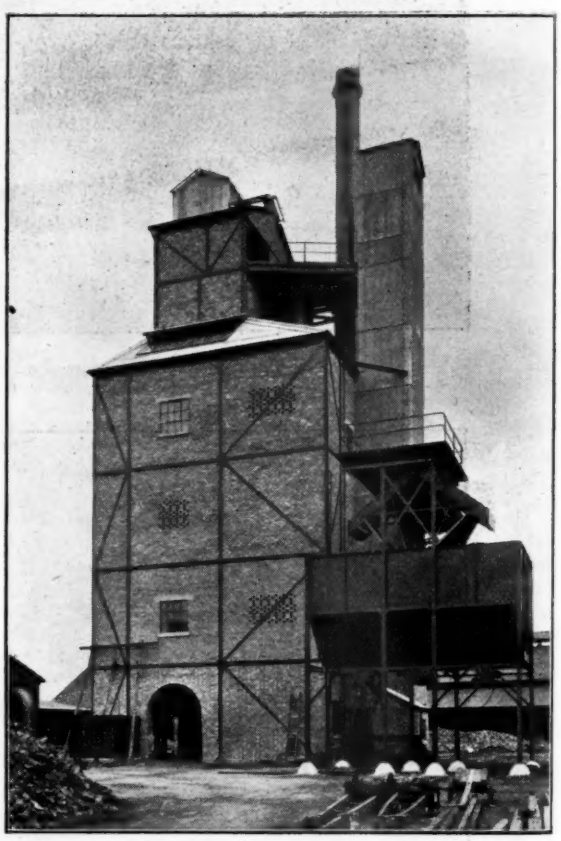
It may be mentioned that the Newmarket Gas Company was formed in 1837 with a capital of £3000. In 1843 about 100 tons of coal were carbonized per annum, as against 6000 tons per annum at the present time. The Company now have a staff of thirty-four, and the gas made last year amounted to 65 million c.ft. The total cost of the new installation was £14,343.

Prior to the opening ceremony, those present were entertained at luncheon at the Rutland Arms Hotel by the Chairman and Directors of the Newmarket Gas Company. Mr. ROBERT STEPHENSON presided, supported by Mr. C. B. Bosworth, Captain T. R. Leader, and Mr. F. C. Paine (Directors), Mr. Troughton, and Mr. Jackson.

After the Loyal Toast had been honoured,

The CHAIRMAN said that the new installation of vertical retorts was undoubtedly a landmark in the history of their Company, and he was pleased to have so many shareholders, as well as members of the Urban District Council, present to inspect the installation. They were also fortunate in having with them the Managers of the gas-works at Bury and Ely, and Mr. Auchterlonie, of Cambridge, because they would be able to criticize, and give the Company the benefit of their criticisms. With regard to the Cambridge Works, which he had the pleasure of visiting some few years ago, he thought there were few works in the kingdom to compare with them; and he was greatly impressed by the manner in which the Cambridge Company provided recreation for their employees. He thought the Co-partnership Club they had formed there was most admirable. They would be surprised to learn, as he had been, that the annual increase in the sales of gas at Cambridge was equal to the total amount of gas consumed at Newmarket. This brought him to another point—the growing importance of the gas industry generally, a fact which few people realized. The speaker went on to point out the great service rendered by gas undertakings during the war. The great advantage of their industry was that practically every ounce of coal that went into a gas retort was converted into something useful, in the form of gas or of bye-products. He had great pleasure in proposing "Success to the Gas Industry," and in coupling with the toast the name of Mr. Auchterlonie.

Mr. J. W. AUCHTERLONIE thanked the Chairman for his kind remarks, and especially for his reference to the Cambridge Works. He said that the gas industry was one of the most important in the country, and supplied a commodity which was a prime necessity in every household, while between four and five thousand industries were very largely dependent upon it for the manufacture of their products. The gas industry claimed that they took out of the coal 80 p.ct. of its latent efficiency in heat—possibly Mr. Jackson claimed for Newmarket that it took 82 p.ct. now. What did the electricity companies claim? He thought that even with a super-station they



could not claim above 20 p.ct. from the coal consumed. The Chairman, he continued, had referred to the co-partnership scheme at Cambridge. He was pleased to say that this year the great majority of their men had 8¼ p.ct. bonus on their salaries or wages, so that even the lowest paid man had practically £10 bonus this year; and this made the men all the more anxious to do their best for their Company. In conclusion, he commended the propaganda of the British Commercial Gas Association, which was bringing before the public what gas could do. He considered that the public were still not so well informed as they ought to be.

SCOTTISH JUNIOR GAS ASSOCIATION.

(WESTERN DISTRICT.)

Visit to the Kingshill Colliery.

On Saturday, Oct. 20, a party of fifty members of the Association visited the Kingshill Colliery, Newmains. Mr. TELFER, the Managing Director of the Coltness Iron Company, welcomed the party, who were conducted round the plant, and then proceeded underground. After the inspection of the workings, tea was served.

Mr. JOHN MURRAY (President of the Association) thanked the Coltness Iron Company for their hospitality. This was not the first occasion on which the Western Juniors had visited the works of the Company; for previously they had inspected the cement plant and the washing and screening plant, which were most modern. He expressed the appreciation of the Association of the kindness of Mr. Telfer and his able assistants.

Mr. TELFER, in reply, stated that the aim of the Company was to have a model colliery. The output was 1600 tons per 8-hour shift from one seam; the average thickness being 30 in. The cutter and carrier which were seen at the face were of the most modern type. Also they had an electric locomotive underground which was the first in Scotland, and had proved a very great asset to the Company. (The entire party, it must be mentioned, had travelled by electric train from the shaft to the face.) The sum of £250,000 had been spent on plant and equipment for washing, sizing, and screening the coal. He was proud to say that they had good coal and a good plant. On the welfare side, the Company had undertaken a scheme which included the provision of baths and a canteen, at a cost of £1200.

Mr. J. W. MCLUSKY (Engineer and Manager to the Glasgow Gas Department) endorsed all that Mr. Murray had said, and congratulated Mr. Telfer on his plant and service. He was very pleased that such an excellent welfare scheme was in progress, because this was a big factor in ensuring efficiency.

Wales and Monmouthshire Junior Gas Association.—The next meeting of the Association will be held at the Gas Offices, Bute Terrace, Cardiff, on Saturday, Nov. 10, commencing at 7 p.m. A paper entitled "Some District Complaints" will be read by Mr. J. Hislop (Newport). The intended visit to the Dowlais Works, Cardiff, will, unfortunately, be impracticable.

YORKSHIRE JUNIOR GAS ASSOCIATION.

Annual Meeting at Leeds University.

The Twenty-Fifth Annual Meeting of the Yorkshire Junior Gas Association took place on Oct. 26, at the Fuel Department of the Leeds University. The PRESIDENT (Mr. C. H. Chester, of Wakefield) occupied the chair, and there was a very large attendance of members.

The PRESIDENT welcomed Mr. E. J. Sutcliffe, the Bradford City Gas Engineer and General Manager, a former President of the Yorkshire Junior Association, one of its earliest and most stalwart members, and now an esteemed Hon. Member; Mr. J. Bridge, Engineer and General Manager to the Elland-cum-Greetland Gas Company, and Chairman of the Yorkshire District Gas Education Committee; and Mr. H. J. Hodsman and Mr. J. W. Wood, of the Fuel Department staff of the Leeds University.

The HON. SECRETARY (Mr. J. W. Horwill, of Bradford) submitted the annual report, which stated that eight meetings had been held during the past session, including a joint meeting with the Manchester and District Junior Association. Attendances had been consistently satisfactory. The membership of the Association was now 188—an increase of 16 during the year. In the session, several meetings of the Yorkshire District Education Committee had been held; and the representatives of the Association appointed at the last annual meeting—Messrs. C. H. Chester, C. T. B. Roper, R. N. Webb, and the Hon. Secretary—had attended those meetings. It was pleasing to note that through the efforts of the District Committee, The Institution of Gas Engineers' Education Scheme had received more attention and support both by education authorities and by students. Mr. Chester had continued to act as Hon. Secretary to the District Committee.

The statement of accounts, presented by the HON. TREASURER (Mr. H. E. Wilde, of Bradford), showed a credit balance of £104, as compared with £106 at the commencement of the year.

The adoption of the report and accounts was formally moved by Mr. HERBERT RHODES (Bradford), seconded by Mr. E. BAILEY (Spenborough), and carried.

The PRESIDENT, commenting on the report, said that the increase in membership indicated that the gas industry continued to grow and prosper. Two of the most important developments in the gas profession during the past year had been the application for a Royal Charter by The Institution of Gas Engineers, the parent body; and the wider administration of the Education Scheme. Enlarging on the work of the Yorkshire District Education Committee, of which he was the Hon. Secretary, Mr. Chester said the Committee comprised four representatives of the Manchester District Institution of Gas Engineers—Messrs. J. Bridge (Elland), who was the Chairman, J. Lister Cooper (Yeadon), F. H. Robinson (Harrogate), and C. W. Ward (Wakefield)—together with the four appointed representatives of the Yorkshire Junior Association, and Mr. Wilson, H.M. Inspector of Education. These two developments should certainly produce an increase in the status of the members of the gas profession; and as status and salary were very largely synonymous, it behoved all juniors to put their utmost into the work of the Gas Education Scheme. ["Hear, hear."] Mr. Chester said he believed the Juniors first propounded the idea of the Scheme, and first grumbled about it; and the District Committees had been formed as a result of the Seniors' anxiety to meet the desires of the Juniors. In Yorkshire they were particularly fortunate in having an enthusiast like Mr. Bridge as the Chairman of the Committee—a man who had done such a great deal of work on behalf of the Education Scheme from its inception. At no little trouble to himself, he had dealt with some hundreds of applications from various parts of the country, and had brought their cases before the authorities in London.

THE EDUCATION SCHEME.

Mr. J. BRIDGE (Engineer and General Manager to the Elland-cum-Greetland Gas Company), speaking as Chairman of the Yorkshire District Gas Education Committee, said that Mr. Chester had given him far too much credit. He had done his best for a scheme in which he was intensely interested and from which he had great hopes for the good of the industry, but he could only have played a very small part but for the loyal support of the other members of the District Committee, and the sympathetic hearing he had always had from the members of the Central Committee in London. There had been criticisms from Juniors in regard to complications and regulations which had to be complied with under the Scheme. It had been suggested that, if a simple prospectus was drawn up, as, for instance, in the case of the Civil Engineers or the Mechanical Engineers, the matter would be easier to follow. There were, however, big differences between the Gas Education Scheme and the examinations of those other institutions. The latter had simply an examination scheme, whereas the gas industry had an Education Scheme. He was convinced that the latter was essential to the gas industry; and he would personally be very strongly opposed to any movement which was introduced to do away with the excellent Education Scheme and adopt merely an examination scheme. More than ever was he convinced of this since they started the work on the District Committee, through which they had dealt with so many applications and with many students. He did hope that the Juniors would support the Scheme as it stood, despite the complications and regulations. The Green Book could, no doubt, be modified somewhat as time went on. One of the most notable extensions during the past twelve months had been the formation of the District Committees. If there were young men who found it difficult to understand the regulations and conditions laid down in the Green Book, the District Committees were there to smooth out all such difficulties; and if any Junior in the Yorkshire district would apply to Mr. Chester for information, he would be supplied with it willingly. If, by chance, Mr. Chester was unable to deal with the matter in question, there was the Committee to fall back upon; and he thought they would be able to give the desired advice in every case.

The Scheme had now got into a very workable condition, and he would ask every Junior in the Yorkshire Association to give it the utmost support. He was not suggesting that the older members should sit for the examinations; but the younger members would certainly find it of great advantage to themselves, and the older members of the Association could help greatly by using their influence with the younger men in their various undertakings. Mr. Bridge said there were still a good many young men in the undertakings who were not members of the Yorkshire Junior Gas Association, and he urged every member to help to get those young men into the Association, and persuade them to enter the Education Scheme. There might, perhaps, be difficulties on the part of some students in regard to getting to the centres of technical education. The Committee had issued a circular questionnaire on this point to every gas engineer in the Yorkshire area, and there had been a good response. The Secretary had some little time ago given him (Mr. Bridge) figures which he had had the pleasure of reporting to the Manchester District Institution's Council. It was found that in Yorkshire there were 80 students, but 182 potential students. If there was difficulty in the matter of getting to the educational centres, Mr. Chester, as Hon. Secretary of the Committee, and Mr. Wilson, the Board of Education Inspector, were willing to do their utmost to arrange for classes in centres more easily within reach. Mr. Bridge said he might go so far as to say that if a Junior found it difficult to get time off, or to meet the expense involved in attending the nearest available classes, the Committee would give sympathetic consideration to the possibility of any little help that might be afforded in such a case. The District Committee was there solely with the object of helping the Juniors to get on in the world. Mr. Bridge said he would like to draw attention to the remarks of Mr. Terrace, the President of The Institution of Gas Engineers, at the recent meeting of the British Commercial Gas Association at York. Mr. Terrace said that the Institution was not likely to have to wait much longer now for the Royal Charter. There had been difficulties; and assurances had had to be given that the status of the Institution would be fully guarded, and that only those who were fully qualified would be admitted to full membership of the chartered Institution. As time went on, possession of the Diploma would be an essential qualification for admission to membership of the Institution; and it was now up to every Junior to prepare for the time when he could claim membership of the Institution. It was very desirable that the doors of the Institution should be widened; but the men in charge must see to it that the qualifications were kept well up to the standard required. By fixing the possession of the Diploma as a necessary qualification, they were acting on the right lines.

NEW OFFICERS.

Mr. CHESTER, in introducing Mr. S. H. Packer (Bradford) as his successor in the presidency of the Yorkshire Junior Gas Association, said that he needed no introduction to the members. They all knew his many services both to that Association and to the West Riding of Yorkshire Gas Salesmen's Circle. He hoped the members would give Mr. Packer the loyal support—especially in the way of discussions—that they had given to him (Mr. Chester). Mr. Packer had been the first Chairman of the Salesmen's Circle, and had retained that office until the new movement got well established and the spade-work of initial organization was completed. If he put into the Yorkshire Junior Association presidency such efforts as he had put into the Salesmen's Circle, then they had got an excellent and hard-working new President.

Mr. PACKER, on taking the chair, said he was proud to ac-

cept the honour for three reasons. First, because he regarded the presidency of the Yorkshire Junior Gas Association as one of the most coveted honours that a junior member of the gas industry in Yorkshire could hope to attain; secondly, because, as Mr. Chester had hinted, it enabled him to break a record in being the first member to have occupied the chair of both the Yorkshire Junior Association and the West Riding of Yorkshire Salesmen's Circle; and thirdly, because the fact of being called to such a high position gave one a great stimulus to further work for the industry—a stimulus which perhaps one began to need as one approached the comfortable period of middle age.

PRESENTATION TO RETIRING PRESIDENT.

Mr. PACKER then presented to Mr. Chester the medallion which it has become customary in the Association to present to each retiring President, as a mark of appreciation of services in the chair.

Mr. CHESTER, responding, said he was vitally interested in the work of the Association, of which he had been a member for the past eleven years; and the token would be a constant reminder of many happy occasions on which the members and himself had met together with a view to being of mutual help.

On the motion of Mr. E. A. LEASK (Leeds), seconded by Mr. A. WYLIE (Sheffield), a hearty vote of thanks was awarded to the retiring officers, members of Council, and Hon. Auditors.

Mr. CHESTER and Mr. J. W. HORWILL (Secretary) responded. Mr. Chester paid high tribute to the work of Mr. Horwill, and regretted that in securing an excellent Junior Vice-President that day they were losing a fine Hon. Secretary. He mentioned that the Council had decided to make a presentation to Mr. Horwill in appreciation of his services for a good many years past as Hon. Secretary, and would be circularizing members on the subject shortly.

On the motion of Mr. V. F. SIDDONS (Sheffield), seconded by Mr. R. BAKER (Sheffield), formal confirmation was given to the elections (unopposed) of the following officers of the Association for the coming year:

President.—Mr. S. H. Packer (Bradford).
Vice-Presidents.—Messrs. F. Firth (Leeds) and J. W. Horwill (Bradford).
Hon. Treasurer.—Mr. H. E. Wilde, 21,23, Darley Street, Bradford.
Hon. Secretary.—Mr. R. Crowther, Gas-Works, Elland.
Assistant Hon. Secretary.—Mr. J. R. Firth, 21-23, Darley Street, Bradford.
Council.—Messrs. E. Gillett (Bradford), F. J. Jackson (Sheffield), J. W. Holroyd (Elland), R. N. Webb (Leeds), J. W. Carlton (Shipley), S. T. S. Musgrove (Sheffield), and C. H. Chester (Wakefield—*ex-officio* as ex-President).
Hon. Auditors.—Messrs. A. W. Arnold (Bradford) and F. Lodge (Wakefield).
Representative of Manchester District Institution of Gas Engineers on the Yorkshire Junior Association Council.—Mr. W. B. McLusky (Halifax Corporation Gas Engineer and Manager).

ADDRESS

of E. J. SUTCLIFFE, Gas Engineer and Manager to the Bradford Corporation.

At the outset I must express my appreciation of the honour you conferred on me last year when, on the recommendation of the Council, you elected me an Hon. Member of the Association. It is an honour I value very highly, and I thank you sincerely for it.

ASH IN COAL.

A subject which is rarely absent from a gas engineer's thoughts is that of coal. If he is well bought and for a lengthy period, it is necessary, I am sorry to say, to be ever on the alert to see that the quality of the deliveries is maintained up to the standard. When buying coal, however, the subject is even more important, as it is essential that the best value be obtained for the money to be expended; and the estimation of the best value is often a difficult problem with the plant and apparatus at one's disposal. It is not, however, on the question of coal valuation that I wish to speak just now—that has already been dealt with in an efficient manner recently by Mr. C. H. Chester and Mr. F. J. Jackson—but rather of the ash content of the coal. We are tired of paying the price of good coal for material which is not only useless, but a source of expense until we get rid of it. Wages have to be paid on handling it as coal, on carbonizing it, on handling it as coke, or carting it away as clinker from the furnaces; the gas output per ton, per day, and per unit of plant is reduced; the heats of the retorts cannot be maintained except at the cost of additional labour; and the producer itself suffers from contact with the clinker formed from it. There is no doubt whatever that the separation of dirt (as distinct from the inherent ash in the coal) might be, and must be, much more efficiently carried out at the pit than has been the case during recent years. Many collieries have installed plant for washing the impurities out of the coal after its passage over the picking belt. By this means possibly 2 p.ct. or more of dirt may be washed out, and 2 p.ct. or more of water added. While buying water by weight at the same price as coal is somewhat expensive, it is, however, the lesser of the two evils in the long run. More recently some collieries have adopted a dry cleaning process, which has obvious advantages over washing. Coals treated by this method, according to the average of a large number of tests, contain at least 2 p.ct. less moisture than washed coals.

During recent years it has often been suggested in the Technical Press that coal should be bought on an ash basis, the price to be reduced as the percentage of ash increased. I have heard that one colliery is prepared to enter into contracts on such a basis; and have read that several years ago the Wolverhampton Gas Company bought 90 p.ct. of their coal on this basis; but until last March, we in Bradford had never concluded such a contract. However, when buying then for the year commencing on Oct. 1, I took exception to the amount of ash in the coal from one pit from which we have had deliveries for many years; and as the Colliery Company were putting in a dry cleaning plant during the summer, they offered to sell on an ash basis. We eventually agreed upon a 6 p.ct. ash standard, with an allowance per ton for each complete 0·25 p.ct. of ash in excess of that figure. Both the contractor and ourselves are to take a sample approximately proportionate to the weight from each delivery; and every month each of these is to be mixed thoroughly, and samples are to be exchanged, so that both sides test both samples. Of course, when buying coal by this method, the standard taken as a basis for the ash content would in every case be considered in conjunction with the price of the coal. Every individual coal must be considered separately both as regards the standard allowance of ash and the basic price.

OLD GASHOLDERS.

The disastrous and mysterious accident in connection with two gasholders at the Bradford Road Gas-Works, Manchester, in August, 1927, has caused serious anxiety on the part of many gas engineers who have in constant use holders of a much greater age than those at Manchester. At the inquiry conducted by an Inspector of the Board of Trade in February last, expert engineering opinion was that the cause was either (1) failure of the crown or side sheeting or (2) failure of the roof trussing. Tests of the sheeting had been made at the Manchester College of Technology, but nothing abnormal was found, and there was no indication that there had been any change from the date of manufacture, though the metal was somewhat weaker than would have been expected in recent practice. The "GAS JOURNAL" summarized the result of the inquiry as follows: "The position in which matters were left at the close of the inquiry suggests the possibility of finding that time and service had weakened the internal metal work, and that this was the primary cause of the collapse. If this is so, then it will open up a vista of research for the industry to ascertain whether the nature of the metal itself or the changed conditions of gas-making, or both acting in combination, subscribed to the weakening to a degree to bring about collapse."

In view of the evidence offered at the inquiry, an unfortunate accident with a small holder at our Mill Street Works on Dec. 26, 1927, put us in the position of being able to make a thorough examination of the sheeting and roof trussing of a holder erected twenty years before the Manchester ones—in 1861. The foreman in charge at the time of the accident was pumping gas from this holder to another works, and, neglecting to watch the progress of his pumping, went on after the holder had grounded, with the inevitable consequence that the crown was pulled in. The crown sheeting was badly buckled, especially near the centre; but upon putting pressure into the holder bell, the crown resumed its normal shape approximately. Not knowing whether, or to what extent, the roof trussing was damaged, the manhole plates were removed, and it was found that the kingpost had been deflected from the vertical, fouling the rest block and hence knocking down the centre pier upon which it stood, with the consequent breaking of every tie-rod and the buckling of all the crown bracing and strutting. Some of the badly buckled crown sheets were cut out, and it was noticed that when broken they showed evidence of crystallization having taken place. A plate was therefore sent to the Engineering Department of the Bradford Technical College to be tested. The report on this stated that the limit of elasticity was from 12·45 to 13·05 tons per sq. in. only; and the elongation varied from 6 p.ct. to 11 p.ct in one direction and from 3 p.ct. to 7 p.ct. in the opposite direction. The report added: "This metal has lost its nature, and is past useful service."

Upon receipt of this report, it was deemed advisable to test some of the side sheets, and these proved to be a little, but not much, stronger than the crown sheets. The yield point was from 13·47 to 14·05 tons per sq. in., and the elongation from 4 p.ct. to 12 p.ct. Lloyd's Committee have adopted the following tests for ships' plates:

Ultimate tensile strength 27 to 31 tons per sq. in.
Elongation 20 p.ct. on a length of 8 in. before fracture.

We also riveted pieces of the old sheeting together by six

rivets, and in five cases the metal split between the rivet hole and the side of the plate. Comparing these facts and figures with those of the Manchester holder (which yielded at 10·4 and 12·6 tons per sq. in.), and having regard to the fact that the latter holder was erected in 1880 and ours in 1861, it was decided to renew the whole bell.

It was obvious that it was inadvisable to use either the crown or the side sheets again. The metal of the roof trussing seemed in quite good condition, but the members had been buckled and twisted to such an extent that it was not possible to bring them into use again. As was usual, I believe, in holder construction up to the time this holder was built, the guide pulley carriages on the crown were fixed not at the end of the main bars of the roof trussing, but at intermediate points. The reason for this was that with cast-iron guide framing (which was then the common type) a certain degree of backward and forward play of the pulleys in the channel guides was almost necessary, as these, being also of cast iron, were seldom truly vertical. Hence, if the carriages were firm, as they would be when fixed upon the main bars of the roof trussing, a serious strain would be thrown on the roof at certain points in the travel of the bell upwards. It was usual, therefore, to fix the carriages at intermediate points so that the flexibility of the sheeting would take up any deviation of the guide channels from the vertical. This would undoubtedly set up a strain in the sheeting which it was not intended to stand, and might have a more or less serious effect on the life of the sheeting by causing it to lose its fibrous nature and become crystalline.

In his "Civil Engineering" Prof. Rankine says "it is still a matter of dispute to what extent and in what circumstances wrought iron loses its fibrous structure and toughness and becomes crystalline and brittle. By some authorities it is asserted that all shocks and vibrations tend to produce that change; others maintain that only sharp shocks and vibrations do so; and others that no such change takes place, but that the same piece of iron which shows a fibrous structure, if gradually broken by a steady load, will show a crystalline fracture if suddenly broken by a sharp blow. . . . It is certain, at all events, that iron ought to be as little as possible exposed to sharp blows and rattling vibrations." The same authority also says: "It is of great importance to the strength of all pieces of forged iron that the *continuity of the fibres* near the surface be as little interrupted as possible; in other words, that the fibres near the surface should lie in layers parallel to the surface."

Applying these opinions to our experience with the holder in question, it appears to me that a holder built as described must inevitably be subject to such conditions as tend to render the iron crystalline. The cast-iron guides not being plumb, the pulleys at some part of their ascent must have play to a certain extent; and even in a slight wind the bell will be thrown forwards and backwards, causing more or less sudden and sharp shocks in the sheeting, especially to that in proximity to the pulley carriages. In a strong wind the shocks will be much sharper and heavier. At another point, the pulleys may be tight against the guides at part of, or even all the way round, the circumference; and here again the extra strain is thrown upon the sheeting. It may almost be taken for granted that the fibres of the sheets under these conditions are subject to both compressive and tensile strains alternately, and, in the opinion of most authorities, rupture then takes place more readily than if they were subjected to either alone. It is not difficult to understand that under such conditions, prevailing for fifty years or more, the metal might lose its nature to a less or greater extent, and become crystalline and brittle, and ultimately give way at the weakest point. That such strains as I have described are set up in the sheets I have no doubt, for I know of one holder in which the crown carriages are fixed at points intermediate to the main bars where the crown sheets and the top side sheets to which the carriages were attached (having no direct support underneath) were cut through by the edges of the carriages working up and down, or forward and backward, as the wind affected them, and had to be renewed. These sheets had obviously been called upon to bear strains which they were not capable of standing, and in course of time fatigue set in and eventually they gave way.

I have not touched upon the question as to the quality of the metal of which the sheets are made. The fact that there are many holders of sixty to ninety years of age still in use, while some of comparatively recent date have developed leakage a few years after erection, and remembering also the trouble experienced with so-called wrought-iron tubing during the last decade, lead one to think that the quality of the metal itself is a great factor in the problem—that the wrought iron of ninety years or so ago was much more capable of withstanding the effects of shock and vibration, and was much less subject to corrosive action than the inferior wrought iron, the steel, and the mixtures of wrought iron and steel which have been placed upon the market as wrought iron during recent years.

Hiring of Cookers and Fires.

In June, 1927, the Bradford Gas Committee decided to recommence the practice of letting cookers and fires out on hire which was discontinued during the war, at the request of the Government for economy, and also to initiate in the city the hiring of meters. The latter system was new to our customers, for only in exceptional circumstances had meters been rented previously. This was because of the custom, originally adopted by the Bradford Gas Company in 1823, and never given up, of insisting upon owners of property buying their own meters. However, *autres temps autres mœurs,* and the changed conditions of the present day in the building trade rendered it advisable to make an alteration in our methods. That the change was justified is indicated in the following figures, which give the numbers of cookers, fires, and meters let out on hire, &c., during the twelve months after the adoption of the system:

—	Sold for Cash.	Sold on Deferred Payment System.	Hire.	Total.
Cookers	464	370	2230	3064
Fires	1895	59	852	2806
Meters	..	..	1417	1417

It is not wise to generalize too much upon a twelve months' working only, but it is significant that the re-adoption of the system of hiring out of cookers and fires and the renting of meters synchronized with a rapid increase in our consumption; or rather the decrease in consumption on the corresponding month of the previous year was gradually wiped out and converted into an increase, and the increase has been well maintained.

Another somewhat significant fact is that the consumption of the smallest consumers showed a tendency to increase. Here again it is perhaps not wise to be hasty in drawing conclusions upon data based on comparatively short periods, but the figures are interesting nevertheless.

C.Ft.	June, 1927, Half-Year.			December, 1927, Half-Year.			Total Consumption in Thousands.
	No. of Consumers.	Consumption in Thousands.	Average C.Ft. per Consumer.	No. of Consumers.	Consumption in Thousands.	Average C.Ft. per Consumer.	
To 5000 . .	45,263	138,054	3,041	30,871	101,256	3,312	239,310
5000 to 10,000	24,609	169,324	6,880	34,270	243,444	7,103	412,768
Over 10,000 .	11,992	441,845	36,844	18,277	586,180	32,172	1,028,025
	81,864	749,223	..	83,418	930,880	..	1,680,003

The smallest class of consumer increased his consumption by 271 c.ft. per half-year, and the next class—from 5000 to 10,000 c.ft. per half-year—consumed 223 c.ft. more. More satisfactory still is it to find that the number of consumers below 5000 c.ft. decreased from 45,263 to 30,871—a reduction of 14,392—while those consuming from 5000 to 10,000 c.ft. increased from 24,609 to 34,270, or 9661; and those over 10,000 c.ft. from 11,992 to 18,277—an increase of 6285. Of course, the influx of a large number of consumers of just over 10,000 c.ft. to the third group from the second brought down the average consumption in the third group, as would be expected.

Prepayment Meters.

The prepayment meter never made much headway in Bradford as it did in many other towns, for the simple reason that there was no scope for it. For over fifty years it had been the custom for all new houses to be supplied with gas-fittings, as tenants would not take a house without a gas supply. About twenty-five years ago there were only seven houses of a weekly rental above 4s. in which gas was not used. All owners of cottage property were responsible to the Corporation for the gas consumed in those cottages, and they collected a sum weekly along with the rent sufficient to meet the account for gas. An adjustment was made at the end of each half-year, according to the quantity of gas consumed in each case. All the accounts of the landlord were grouped together in one account, and he was allowed the maximum discount for the trouble of collection and for undertaking responsibility for the accounts. As a result of this custom, the number of houses in Bradford without gas was always insignificant compared with other towns, and consequently there was no necessity for the introduction of the prepayment meter.

During post-war days, however, things changed. House buyers insisted upon houses being wired for electric lighting, having been smitten with the fashionable craze, and builders were not anxious to pay for both electricity and gas services and buy the gas meter also. The purchase of the meter (and in many cases the gas service also) was, therefore, left to the buyer; and hence many new houses were sold and occupied without a supply. In the case of some of the older houses, landlords refused to repair the meter or the gas fittings when out of order; and unless the tenant would bear the cost of the repair, he was left without gas. In many cases in cottage property, where, as previously mentioned, the landlord was responsible for the gas consumed by his tenant, we were

authorized to cut off the supply if the tenant got into arrears with his rent, or when any dispute arose between landlord and tenant. From a supplier's standpoint, this was most unsatisfactory. Therefore, in June, 1927, the Gas Committee resolved to commence letting out meters on hire, and, in cases where the consumer was unable or unwilling to pay a deposit, to give him a supply by prepayment meter if he desired it. During the succeeding twelve months 1755 prepayment meters were sent out; and, as before mentioned, 1417 ordinary meters were put out on hire.

ALLOCATION OF COSTS.

An examination of the accounts of various gas undertakings reveals such a marked difference in the costs of certain classes of work carried on that it almost convinces one that the allocation of costs, and particularly of labour costs, by different undertakings is in need of revision or of standardization. We found this to be the case even in considering the costs of the same work at our different manufacturing stations; a marked variation in the cost of the same work being found to be due to different methods of charging labour to the different heads. In order that results might be strictly comparable, we formulated a sheet of instructions showing the different heads under which each class of work should be allocated, and in what was regarded as fair propositions, so that now we know that the cost of doing the same work at the various stations includes exactly the same items, and the figures are, therefore, strictly comparable. I have set out below the work which is charged up under the heads—Coal, Carbonization, Coke, Repairs of Retorts, Purification, and Maintenance of Works; these being the principal items upon which labour is spent on the works.

COAL:

(1) Unloading wagons or carts.
(2) Coal into or out of stock.
(3) Loco driver and shunter (¾ coal and ¼ coke).
(4) Wagon weighbridge attendant (¾ coal and ¼ coke).
(5) Weigh clerk (½ coal and ½ coke).

CARBONIZATION:

(1) Foreman stokers and
(2) Assistants.
(3) Stokers.
(4) Coke wheelers.
(5) Coal trimmers.
(6) Pipe jumpers.
(7) Scurfers.
(8) Flue cleaners.
(9) Foreman retort setter (in winter unless on special work. See below).
(10) Greasers in vertical retort houses.
(11) Firemen.
(12) Hydraulic main men.
(13) Taking ashes from retort house.
(14) Loading and leading ashes.
(15) Boiler firers.
(16) Exhauster enginemen.
(17) Coal and coke elevator men.
(18) Making and repairing coke and ash barrows.
(19) Repairing retort house tools.

COKE:

(1) Loading and leading coke.
(2) Stocking.
(3) Breaking.
(4) Repairing coke bags.
(5) Assistant shunter.
(6) Picking ashes.
(7) Yard foreman (½ coke ½ maintenance works).
(8) Wagon weighing attendant (¼ coke ¾ coal).
(9) Weigh clerk (¼ coke ¾ coal).
(10) Loco driver and shunter ¼.

REPAIRING RETORTS:

(1) Bricklayers and labourers repairing or renewing retorts.
(2) Bricklayers pointing, &c.
(3) Smith repairing mouthpieces and other bench ironwork.
(4) Smiths or fitters repairing machinery, &c., in vertical retort house.
(5) Foreman retort setter, when repairing or renewing retorts.

PURIFICATION:

(1) Emptying and filling purifiers.
(2) Turning, watering, and breaking-up oxide.
(3) Slaking lime.
(4) Cleaning boxes.
(5) Unloading new oxide and loading spent oxide.

MAINTENANCE OF WORKS:

(1) Holidays.
(2) Sick pay.
(3) Painting plant.
(4) Whitewashing.
(5) Paving yard.
(6) Repairs buildings.
(7) Cleaning yard, &c.
(8) Pumping works syphons.
(9) Storekeeping.
(10) Yard foreman ¼.
(11) Snow from holders, &c.
(12) Assistant works managers, chemists, &c.

As far as our own works are concerned, I believe that the work as apportioned is fair and equitable; and while I would not claim that this allocation would be applicable to all undertakings with equal justice, I do think that it might form the basis for a system which would make the figures obtained by different undertakings much more comparable than they often are at present.

PENSIONS SYSTEMS.

I regard it as the duty of all gas undertakings to provide for their officers and men who have given long and faithful service means to retire at 65, so that, after a period of forty or more years of strenuous and conscientious work, they may be able to spend the last few years of life without having continually before them the bogey of ill-health and the consequent possible loss of pay. Very few salaried men are able to save sufficient to enable them to live in retirement on their savings. As a general rule they are not paid sufficiently to do this, for I think it may be taken for granted that it is not possible for a man with a salary to die a rich man. The Local Government Superannuation Act, 1922, has not been adopted by local authorities as it was hoped it would be. I am sure that its adoption would be to the ultimate good of the service in any municipality, and would possibly lead to a better class of men undertaking work and duties in local government service, for it would ensure more probability of promotion all round, and therefore, offer young men more inducement to study and to improve themselves in the hope of preferment at some more or less distant date. Without it, men are often allowed to continue in the service until 75 or 80; and, in all but exceptional cases, this means that a younger man has to do most of the work and take the major portion of the responsibility, while the senior gets the credit and pay for what is done. I hope it will not be long before the adoption of the Act will be made compulsory, and not left to the whims of a committee which cannot see any effect beyond that of an increase in the rates.

SALARIES.

There has been a certain amount of grumbling lately in respect of the salaries offered for vacant positions of responsibility on gas-works. I do not think that there has been as much cause for complaint recently as was the case in pre-war days, but the ruling powers of some undertakings still seem to be of the opinion that technical officials in a gas-works are not of equivalent value to those in other departments of the same authorities' service. With a company, I think it may be truly said that a man will generally get what he is worth when he has proved his value; but this is often not so with a local authority. In the latter case, personal or financial interest in the concern by the members of the committee does not enter into the question, and hence there is little or no inducement in that quarter to get the best out of their officials by suitable encouragement. When questions of advances of salaries arise, they are not familiar with the work of the individuals concerned, and consequently do not know their worth; and so, with an eye upon the next local election, they cut them down to the lowest possible amount, or even refuse them altogether, even when the circumstances are placed before them. I find it difficult to understand the mental attitude of the average councillor when he will (say) vote for an advance of salary in committee, and then vote against the same advance in open Council. While the average committeeman's sympathies may possibly be with the official, both his eyes are glued on the effect of his vote upon the ratepayers of his ward at the next election time.

VOTES OF THANKS.

Mr. R. N. WEBB (Leeds), proposing a vote of thanks to Mr. Sutcliffe, said he came to know Mr. Sutcliffe 25 years ago in the earliest days of the Yorkshire Junior Gas Association; and it was a special pleasure to have the privilege of proposing thanks to him for his address. They had in Mr. Sutcliffe a very worthy successor to Mr. Charles Wood, who lately retired from the position of Bradford City Gas Engineer. If one looked back over the whole history of the Yorkshire Junior Association, one of the most noticeable factors was the consistent lead given by members of the Bradford Gas Department staff in the work of that Association. From the Engineer downwards, they had always encouraged the Juniors year by year, and had produced a constant succession of prominent workers for the Association. That day they had the culminating point in Mr. Sutcliffe, one of their own earliest members and Past-Presidents, coming to address them as the Bradford City Gas Engineer—and giving an address which would be one of the most valuable contributions to the Association's Transactions, and would be read and re-read many times. He had touched on a good many points of importance. With reference to the matter of a superannuation scheme, Mr. Webb was glad to say that Leeds had adopted such a scheme since April, 1923. He only wished it had been adopted in 1843; and then he, as one who entered the Leeds Gas Department 34 years ago, would have been in very much greater benefit now that he was ever likely to be. Superannuation was a fine thing for the members of the industry; and he hoped it would be adopted by every gas undertaking in the country, and would cover not only officials, but also the workmen on the plant, as a proper superannuation scheme should.

Mr. L. SHAW (Rothwell), seconding, said he would like to see superannuation become a national scheme for the gas in-

dustry, so that it could embrace all engaged in gas undertakings, including the small concerns as well as large companies or municipal enterprises. To the younger members present, particularly, it must be a great encouragement to hear Mr. Sutcliffe's address, because it was a splendid antidote to the commonly repeated allegations that the gas industry was on its last legs. It would appear that the industry was still a long way off that position; and there was no doubt at all that the industry had many long years of public usefulness ahead of it.

Mr. SUTCLIFFE, responding, said he had been a member of the Association from the first meeting after it was created from the former class conducted by Mr. Cranfield. He had felt it a great honour to be elected as President to succeed Mr. Cranfield in those early days 23 years ago. In regard to superannuation, Bradford was eighteen months behind Leeds, but this year the whole of the Gas Department staff and workmen had been included, and it was the only Department of the Corporation which, so far, included all the workmen. They would have been brought in earlier but that for some reason their Trade Union objected. Now, however, the workmen had themselves asked to be included, and the Committee had willingly acceded to the request.

A vote of thanks to the authorities of the Leeds University, and to Prof. J. W. Cobb, Head of the Fuel Department, was carried on the motion of Mr. S. T. S. MUSGROVE (Sheffield), seconded by Mr. J. W. CARLTON (Shipley).

Mr. H. J. HODSMAN, in response, expressed apologies for the absence of Prof. Cobb, who had been several days in London and, contrary to his wishes, had found it impossible to attend the meeting. The University authorities were always delighted to extend their hospitality to the Association on the occasion of the annual meeting. He had himself attended the meeting now for some years past, and was always greatly impressed by the very businesslike way in which the meetings were conducted. Of course, the University authorities recognized to the full the valuable work the Association was doing on behalf of the Juniors in the gas industry, and were glad to have an opportunity of helping occasionally.

On the motion of Mr. C. H. CHESTER (Wakefield), seconded by Mr. H. E. WILDE (Bradford), the Association's rule (Rule 8) relating to government of the Association was amended so that the Council (in addition to officers) should now number nine, three to retire annually, instead of the former six, of whom two retired annually. This would apply at the next annual meeting.

SOME ASPECTS OF AMMONIA RECOVERY FROM STEAMED VERTICAL RETORT GAS.

By C. SINGLETON and J. E. STANIER, of Stockport.

[Extract of a Paper read before the Manchester and District Junior Gas Association, Nov. 7.]

The percentage of nitrogen in bituminous coal varies from 1 to 2 p.ct., and the yield of ammonia is to some extent dependent upon the nitrogen content of the coal. As a rule, only about 15 p.ct. of the nitrogen is converted into ammonia. It has been found that at low temperatures (below about 400° C.) practically no ammonia is evolved. The yield rises as the carbonizing temperature increases up to about 1000° C., above which the yield diminishes owing to the decomposition of the molecule. In this connection we call attention to the conclusions drawn by Prof. Simmersbach as a result of his investigations published in the "GAS JOURNAL" for Aug. 3, 1915).

In a paper before the North of England Gas Managers' Association in November, 1925 (see "JOURNAL" for Nov. 11, 1925), Dr. E. W. Smith and Mr. T. Campbell Finlayson, M.Sc., review the conditions under which ammonia recovery is carried out in gas-works, and point out the direction in which alterations might be effected in the recovery of tar and ammonia with a view to improving the character of the final effluent on the lines previously indicated by Dr. Bailey, Chief Alkali Works Inspector. They state that "in the process of distillation of the average gas coal there is condensed in the atmospheric or water cooled condensers 20 to 30 gallons of liquor varying from 5 to 8 oz. strength (1 to 1·7 p.ct. NH_3)," and suggest that, by eliminating the addition of water in the washers, circulating the cooled virgin liquor through a mechanical scrubber, and the provision of an acid catch to remove the last forty grains of ammonia, final liquor of 16 to 18 oz. strength (3·5 to 4 p.ct. NH_3) should be easily obtained.

Even in normal horizontal practice with a recovery of 7 lbs. of NH_3 per ton of coal (which is a higher yield than is usually obtained under gas-works conditions) such a final strength of liquor is unlikely, while in the case of steamed vertical retorts producing a gas of 450 gross B.Th.U. per c.ft. it is beyond the bounds of possibility.

INFLUENCE OF STEAMING ON PRODUCTION OF LIQUOR.

The production of water gas by steaming vertical retorts is a very inefficient process, in view of the large quantity of steam which has to be introduced to obtain a calorific value lower than (say) 480 gross B.Th.U. The volume of liquor produced per ton of coal with vertical retorts depends almost entirely upon the amount of steam introduced into the retort.

In view of the large volume of virgin liquor made in some works operating verticals (figures as high as 50 gallons of virgin liquor per ton of coal, and under 1 p.ct. of ammonia in the final liquor, have been given in some instances), little attention appears to have been directed to determining whether the volume of virgin liquor produced could not be reduced (without detriment to the production of gaseous therms), and to improving the efficiency of the water gas reaction in vertical retorts. It must, however, be conceded that the experiments which have been carried out with "steam scurfing" retorts filled with graded coke, and the simultaneous production of water gas, should tend to increase the percentage of steam decomposed and reduce the volume of virgin liquor produced. It appears to us that efforts should first be directed to reducing the volume of liquor produced to a minimum, and afterwards to methods of improving its character.

ABSORPTION OF AMMONIA BY WATER.

The quantity of virgin liquor produced even in the case of horizontal retorts is more than sufficient to remove the whole of the ammonia from the gas, given that the gas and liquor are brought together with sufficient time contact, at a suitable temperature and pressure, and in a truly counter-current manner.

> NOTE.— 7 lbs. of NH_3 equals 155 c.ft. at 15° C. and 760 mm., and would require only about 14 lbs. (or 1·4 gallons) of water to dissolve same, if dealing with a pure ammonia gas.

In actual working, as the liquor and gas cannot remain in contact indefinitely, this quantity of water is far from sufficient. The absorption is also assisted by increasing the pressure; hence the desirability of working washers under pressure.

Arising from the foregoing, it will be apparent that in the case of vertical retort gas a greater quantity of ammonia will be removed with the virgin liquor, and that it will be more difficult economically to remove the remaining ammonia from the gas than from horizontal retort gas, due to the lower concentration of ammonia in the gas at all stages, necessitating either increased scrubber area, and time contact, or increase in the amount of water used in the washers.

ABSORPTION OF AMMONIA BY SULPHURIC ACID.

With regard to this process, the Alkali Inspector's Report for the years 1910, 1915, 1916, 1917, 1918, and 1919 contained extensive references to the purification troubles experienced at many of the works which had adopted the system. It would appear that at that stage the process was only partially understood, and that the effect on the purifiers of a gas with a high moisture content was not realized.

If some form of secondary cooler had been inserted between the acid washer and the purifiers, with an indirect exhaust steam heater to maintain the gas at a satisfactory temperature and in a suitable physical condition, we do not see why the process should not have been entirely successful, provided provision was made to maintain the purifiers alkaline by by-passing a small quantity of ammonia direct to the purifier inlet.

PLANT AT THE STOCKPORT GAS-WORKS.

The carbonizing plant consists of four battery type settings, each containing twelve "W-D" vertical retorts with a major axis of 78 in. and a minor axis of 19 in. at the bottom. Two settings are constructed of Glenboig fireclay, and are capable of carbonizing up to 7 tons of coal per day per retort; one setting is of Meltham silica; and one setting of Oughtibridge silica, carbonizing up to 8½ tons of coal per retort per day.

The water cooled condensers by Holmes comprise three steel columns 7 ft. 9 in. in diameter, each containing 320 3-in. outside diameter steel tubes, and each column having a nominal capacity of 1,500,000 c.ft. of gas per day. The water cooled tube area is about 4500 sq. ft. per column, and the mean gas velocity at the rated capacity is about 92·7 ft. per minute, giving a mean time contact of 0·194 minute per column. The gases and water pass in series through all the three columns in strictly counter-current direction. The mixture of tar and liquor from either No. 1 or No. 2 condensers (or from both) flow to a sump. The tar is separated, and the liquor is cooled, and pumped over the centrifugal and Livesey washers as desired. The liquor and tar from No. 3 condenser pass to a separator, and afterwards to the strong liquor and the tar wells respectively. From the outlet of the exhauster it is intended to have two distinct streams of gas up to the inlet of the holders;

Each stream of washing plant consists of one 3 million c.ft. per day Livesey washer; one 3 million c.ft. per day "P & A" tar extractor; one 3 million c.ft. Davidson & Liversedge centrifugal washer, and one Holmes acid washer. In this the solution is worked up to 35 to 38 p.ct. ammonium sulphate, with about 4 to 5 p.ct. free sulphuric acid. No trouble from entrained acid is experienced, and a small quantity of gas is allowed to by-pass the washer so that 3 to 4 grains of ammonia per 100 c.ft. are in the gas entering the purifiers. No serious difficulty has been experienced in satisfactorily purifying the gas; and during long periods the purifiers have been working with an overload up to 25 p.ct. without trouble.

No provision has yet been made to effect the removal of the bulk of the tar above the dew-point of the gas, as recommended by Dr. Bailey and other investigators. In this connection we wish to draw attention to the low temperature of the gas leaving the retorts on this type of carbonizing plant, which over long periods does not exceed 75° C. The dew-point of the gas is about 68° to 70° C., according to the rate of steam admission.

Working Results and Tests.

The coals in use consist of eight varieties of screened coal and screened and washed nuts, in the proportion of 43 p.ct. coal and 57 p.ct. nuts, as follows: Yorkshire, 43; Derbyshire, 32·7; Notts., 15; and Staffs., 9·33 p.ct. The average analysis (dry basis) is:

H_2O.	Ash.	V.M.	F.C.	Sulphur.	Sodium Chloride.	Nitrogen.
4·36	5·24	34·97	59·80	1·88	0·108	1·48

An average gas analysis (vertical retort gas only) is as follows:

CO_2.	C_nH_m.	O_2.	CO.	CH_4.	H_2.	N_2.	Gross Calorific Value, B.Th.U.
3·0	2·0	0·7	18·0	18·0	46·3	12·0	Calorimeter, 443·0 Calculated, 438·1

Sulphur compounds in the town gas, 25·3 grains per 100 c.ft.
Naphthalene in the town gas, 1·81 ,, ,, ,, ,,

Carbonizing Results.

Coal carbonized	60,804 tons
Total gas made	1,113,766,000 c.ft.
Average make per ton	18,317 ,,
Average calorific value	446·04
Average therms per ton of coal	81·7
Coke sold per ton of coal	8·9 cwt.
Coke used on works per ton of coal (including C.W.G.)	2·0 ,,
Tar made per ton of coal	16·5 galls.

Crude Gas Tests.

Tests carried out in January, 1928, gave the average moisture content of the crude gas at the retort house governors as 921 grammes per 100 c.ft. at 32° Fahr. and 30 in., equivalent to 2·03 lbs., which corresponds to a saturation temperature of 156·4° Fahr.

Similar tests for ammonia content gave an average figure of 281·2 grains per 100 c.ft. at 60° Fahr. and 30-in. moist, when no tar or liquor was being circulated, while with circulation the average was 306·4 grains per 100 c.ft. The average gas made per ton was at this time about 17,500 c.ft., so that the ammonia in the gas without circulation represents 7·03 lbs. NH_3 per ton of coal. Taking the moisture as 2·03 lbs. per 100 c.ft. at 32° Fahr. and 30 in., about 341 lbs. of water are condensable per ton of coal in cooling the gas to 60° Fahr.; and assuming 25 grains of NH_3 per 100 c.ft. remain in the gas for removal in the acid washer, the final strength of liquor which might be expected under these conditions, with no added water, would be 1·88 p.ct. NH_3.

Liquor and Tar Circulation in Gas Uptakes and Foul Mains.

The circulation of liquor and tar in the uptake pipes and foul mains of vertical retort installations is now extensively practised to ensure freedom from blockages, by removing pitchy deposits and by extraction of ammonium chloride. The procedure adopted in this installation is the repeated circulation of a hot mixture of tar and liquor with the continuous addition of fresh tar and liquor from storage; the excess flowing back to the weak liquor and tar wells after cooling. An interceptor and catch tank are inserted in the circulation system from which the solid matter is periodically removed. The effect on the fresh liquor of continuous circulation is shown by the following tests:

—	Fresh Liquor Entering into Circulation.	Liquor Taken from Seal Pots after Circulation.
Temperature of liquor as sampled	84° Fahr.	155° Fahr.
Free NH_3	1·258 p.ct.	0·850 p.ct.
Fixed NH_3	0·586 ,,	0·816 ,,
Total NH_3	1·844 p.ct.	1·666 p.ct.

The reduction of 0·178 p.ct. in the total ammonia content of the liquor, and 25·2 grains of NH_3 per 100 c.ft. of gas, as shown by the ammonia tests, represents on a gas make of 17,500 c.ft. per ton a liquor circulation of about 35 gallons per ton of coal, or equivalent to the total liquor condensable from the gas per ton of coal. This indicates that a state of equilibrium is attained between free and fixed NH_3; the absorption of chloride and the substitution of free by fixed only taking place dependent on the chloride produced per ton of coal—*i.e.*, the lower the chloride in the coal, the less in the liquor, as the chloride evolved from the coal has to be removed in solution to prevent crystallization and pitchy deposit in the foul mains.

The bulk of the ammonium chloride is deposited in the seal pots and foul mains.

Dr. Bailey, in a series of laboratory investigations (Alkali Works Report), shows the necessity of limiting as far as possible the contact of hot tar with liquor high in free ammonia, owing to the greater absorption of phenolic and colour-producing bodies, as compared with contact with liquor containing most of the ammonia as fixed salts. It would appear, therefore, that a system of recirculating tar over and over again after cooling, with only the minimum quantity of liquor added to avoid blockages, would, besides reducing contact of high free ammonia liquor with hot tar, also reduce the ammonia load on the washing plant and increase the efficiency of the plant. One note of warning, is, however, necessary, if this system of circulation is adopted. As the tar flowing to storage will naturally be high in ammonium chloride, the effect of corrosion occurring in the tar stills and tubes will have to be closely watched.

A question worth further investigation is whether it would be advantageous for those undertakings carbonizing coals obtained from the Midland areas to treat separately the high fixed ammonia liquor from the seal pots and foul mains. Many coke oven and bye-product plants recover ammonium chloride where it is found in sufficient quantities to warrant extraction. That extra cost should be incurred in obtaining the ammonia at the sulphate plant by the substitution and loss of one acid radical for another of lower monetary value is a disappointing feature at a time when every small detail in working costs for the production of sulphate of ammonia must be carefully watched in order to show a profit.

The liberation of ammonia from ammonium chloride by means of lime is as follows:

$$\underset{107}{2NH_4Cl} + \underset{56}{CaO} = \underset{101}{CaCl_2} + \underset{34}{2NH_3} + \underset{18}{H_2O}$$

Assuming that lime with an average content of 95 p.ct. CaO costs 28s. per ton, and that 20 p.ct. excess is used at the sulphate plant, the following figures show the additional cost per ton of sulphate of ammonia (25·7 p.ct. NH_3), assuming that the fixed ammonia content exists as chlorides.

Fixed NH_3 Content	10 P.Ct.	20 P.Ct.	30 P.Ct.	40 P.Ct.	50 P.Ct.
Cost of lime per ton of sulphate of ammonia	1s. 5¾d.	2s. 11½d.	4s. 5¼d.	5s. 11d.	7s. 4¾d.

Acid Washer Tests.

March 22 to 28, 1928.

Total coal carbonized	1207·3 tons, or 172·47 tons per day. 7·18 tons per hour.
Total gas made	21,971,000 c.ft., or 3,139,000 c.ft. per day. 130,800 c.ft. per hour.
Gas made per ton of coal carbonized, 18,200 c.ft.	443 gross B.Th.U.
Total solution made	964 gallons.
Total solution per ton of coal	0·798 gallon.
Total solution made per million c.ft. of gas	43·87 gallons.
Average strength of solution	36·90 p.ct. $(NH_4)_2SO_4$
Sp.Gr.	1·234

equivalent to

$$\frac{36{\cdot}90 \times 964 \times 10 \times 1{\cdot}234 \times 100 \times 7000}{100 \times 3{\cdot}882 \times 21{,}971{,}000 \times 1} = 36{\cdot}02 \text{ grains of } NH_3$$

(Sp. Gr. in numerator; (gas made) in denominator)

per 100 c.ft. extracted.

The pyridine content of the solution leaving the acid washer gives an average of 0·272 gramme per 100 c.c.; while the quantity of light tar removed from the circulating tank per day is between two and four gallons. The condensate taken from the main between the acid washer and the purifiers gives an alkaline reaction.

Table showing the Quantity of Water Evaporated in the Saturator, excluding Water Added with the Sulphuric Acid.

—	Gallons per Ton of Sulphate of Ammonia Produced.
Volume of weak NH_3 liquor used for neutralizing	32·5
Volume of clean water used for washing centrifugal basket	10·0
59 gallons acid ammonia solution per ton of sulphate of ammonia of the following composition by weight— Sp. Gr. 1·234: 36·9 p.ct. $(NH_4)_2SO_4$; 4·09 p.ct. (H_2SO_4); 59·01 p.ct. (H_2O)	42·0
Total water evaporated	85·1

The table therefore indicates that only 59 gallons of this strength solution can be evaporated in our present type of saturator per ton of sulphate of ammonia produced; and even then careful watching is required that no surplus water enters the saturator. If much above 40 grains of NH_3 remain in the gas for the acid catch to arrest, it would be necessary to resort to external evaporation to cope with the excess quantity with our present system of using weak ammonia solution for neutralizing.

Though the average strength of the liquor to the sulphate plant over the period Oct. 1, 1927, to March 31, 1928, has increased, compared with the corresponding period for 1926-27, from 1·18 p.ct. to 1·74 p.ct., this latter figure is by no means the maximum which has been obtained. After carefully examining all possible sources of dilution by extraneous water gaining admittance to the storage wells, we have now obtained 1·9 p.ct. to 2·0 p.ct. total NH_3 in the final liquor—or a gain of approximately 65 p.ct. Had the yield of sulphate of ammonia per ton of coal been equal in the two half-years—*i.e.*, 26·5 lbs. per ton of coal—the figures for 1927-28 would have shown to still better advantage. A reduction of 40 p.ct. in the volume of ammonia liquor required per ton of sulphate of ammonia produced has been obtained, together with a similar percentage reduction in the volume of effluent liquor. The estimated steam consumption with 1·18 p.ct. liquor per ton of sulphate of ammonia produced is 12,675 lbs., and with 1·74 p.ct. liquor, 6875 lbs.—a reduction of 45·7 p.ct.

Briefly summarized the following points are worthy of record.

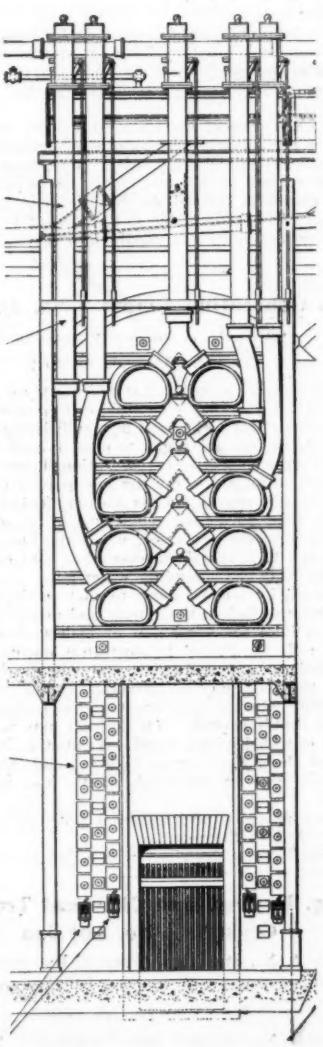
1. That with steamed vertical retorts, the fullest advantage should be taken of the early condensates in the ammonia washing plant arrangements, by utilizing weak liquors free from tar, and cooled to as low a temperature as possible, for washing the gas in counter-current direction. By introducing an acid catch washer for the final extraction of the remaining ammonia, the strength of the virgin liquor has increased by ¾ oz. The resulting higher strength thus obtained, together with evaporation in the saturator of the solution transferred from the acid catch, has been the means of increasing the output from the sulphur plant at 30 p.ct., and at a much lower cost for steam, cooling water, &c.

2. The character of the spent liquor effluent produced from the distillation of the higher strength liquor shows a slightly increased oxygen absorption, but the O/A multiple figure per ton of sulphate produced gives a decrease of nearly 35 p.ct. The reason for this is difficult to find, but displacement of a clean water washer for a final acid washer will undoubtedly cut out the absorption of phenols and thiocyanates which would otherwise take place to some extent. Further, it is possible that the lower O/A multiple figure is reduced on account of the lower solubility of phenols and colour-producing bodies in liquors higher in fixed ammonia compounds, which will be brought about by increasing the strength. Again, the reduced volume of liquor per ton of coal is likely to decrease the contact of liquor with tar.

3. The high O/A figure of condensed liquors from vertical retorts is due chiefly to monohydric phenols and colour-producing bodies; and unless tar separation takes place above the dew-point of the gas, little improvement of the liquor produced can be anticipated.

4. That the amount of H_2S absorbed from the gas during condensation and washing represents only 7·7 p.ct. of the total present.

5. That the amount of chlorides found in the virgin liquor exceeds the actual amount of soluble chlorides found in the coal carbonized. We are of the opinion that the difference is not due to other forms existing as organic chlorides, but that the hot water washing method of estimating soluble chlorides in coals does not give the actual amount present. This impurity acts detrimentally on the refractory materials used in the construction of carbonizing plant. It also increases the cost of sulphate of ammonia production, and is a source of trouble and expense in tar distillation. The writers regret that in the methods of coal analysis issued by the Fuel Research Board no method of estimating this compound is included.



A DISABILITY OF THE ASCENSION PIPE.

Its Effect on Undesirable Fluctuations in Calorific Value.

By H. J. TOOGOOD.

Though the ascension pipe has functioned in our retort houses for well over a hundred years, yet—in spite of much modification of detail, to improve its duty—no fundamental change in the principle of its working appears ever to have been seriously attempted.

It is necessary to realize that an ascension pipe is an artificial chimney, and to visualize its interior as a heated gaseous column having a greater pressure at the base than at the top. In the early stages of the carbonizing period, this gaseous column is comparatively cool, is moisture-laden and dense, and is replenished by large volumes of rich gases. Hence its chimney effect is at the minimum (when it is desirable that it should be at the maximum). In the later stages of the carbonizing period, the gaseous column becomes relatively hot, dry, and rarified, and is replenished by small volumes of lean gases. Hence its chimney effect is at the maximum (when it is desirable that it should be at the minimum). We therefore have the disability that the heavy rich gases in the earlier stages are degraded by prolonged time-contact, and in the later stages the calorific value is reduced by incipient infiltration from outside sources.

If, therefore, this gaseous column forming the interior of the ascension pipe could be more constant in composition and physical properties, then the chimney effect of the ascension pipe would likewise remain more constant, and the ill-effects of fluctuating calorific values, stopped pipes, augering, and degradation of gas yields (both qualitatively and quantitatively) would be largely obviated at the source.

To accomplish this desirable end, it is seriously suggested that, *instead of the gases from various retorts being mixed after they have ascended the ascension pipes (i.e., in the hydraulic main), they should be mixed before they ascend the ascension pipes.* If this be done the merged gases will automatically provide the desired constant media.

This end is simply achieved by the construction illustrated, which, briefly described, consists in connecting neighbouring retort mouthpieces (preferably, for reasons of chimney effect, at the same level) together, retaining two outlets per through retort (one at each end), furnishing one ascension pipe per through retort (two ascension pipes for the two connected retorts, one on each side of bench), and stoking the connected retorts alternately, so that the charges in these retorts are at all times in widely different stages of distillation.

As there are fewer ascension pipes, dip pipes, and accessories, economy is added to the technical advantage of an increased thermal gas yield of more constant calorific value—which, needless to say, is an advance in retort house practice.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

Automatic Control of Calorific Value.

SIR,—I would like to add a few words to the paper given by Dr. Stewart on the "Control of Calorific Value" at the recent meeting of the Eastern Counties Gas Managers' Association (see "JOURNAL" for Oct. 24, p. 259). Some speakers appeared to object to the principle of varying the pull on the retorts according to the quality of the gas being produced. In horizontal retort practice the carbonizing conditions in the retort settings are usually in three or four principal stages, according to the cycle of charging operations. This gives rise to considerable variations in the calorific value of the gas where a constant pull is maintained; and the variations are frequently greater on a small works than on a large one. The only method of equalizing these varying qualities of gas so as to supply a uniform product to the consumer is by mixing in a holder or holders. Personally, I do not regard this as adequate or very satisfactory for works practice; and I have found serious difficulties result, particularly when holder stocks have been low.

The method of controlling calorific value which has been adopted by some of our largest undertakings consists in varying the pull on the retorts in different retort houses from a "control room" by a combination of mechanical appliances operated by an attendant, so as to maintain a uniform calorific value. Dr. Stewart has gone a step further by making the control entirely mechanical. Incidentally, if the calorific value of the gas produced from a retort house is maintained at a constant level, the specific gravity of the gas will, I consider, be maintained within such close limits that no difficulties on that score need be apprehended.

Our experience with this appliance, apart from initial experimental difficulties, has been such as to make me regard it as a valuable aid to efficiency in works practice and to the maintenance of a uniform supply of gas to the district.

JAS. TAYLOR.

Gas-Works, Weston-super-Mare,
Oct. 30, 1928.

Mr. Walter T. Dunn's Retirement.

SIR,—On Wednesday, Oct. 31, I ceased to be Secretary to the Institution of Gas Engineers. Since the announcement of my resignation has appeared in the Press, I have received from many members of the Institution, and from other friends in the gas industry and elsewhere, letters conveying their sympathy that considerations of health should have necessitated my relinquishing the Secretaryship of the Institution—a severance which, after so many years of pleasant, if strenuous, work, has caused me very deep regret.

May I be allowed through the medium of the "GAS JOURNAL" to express the sense of my sincere appreciation of these evidences of goodwill, which I profoundly value?

I am, however, glad to reflect that in retirement I shall continue to meet the friends I have worked for, and love. There will be opportunities at the meetings of the Institution.

In conclusion, I must not fail to thank you for the generous manner in which you personally have written of my services for the Institution, and consequently for the gas industry as a whole. It has made me very happy.

WALTER T. DUNN.

4, Wavertree Road,
Streatham Hill, S.W. 2,
Nov. 3, 1928.

REGISTER OF PATENTS.

Open Grate for Burning Coke.—No. 297,502.

TOOBY, C. F., and LANGFORD, P. N., both of Coventry.

No. 16,800; June 24, 1927.

(Patent of Addition to No. 270,476; April 20, 1926.)

This invention comprises a modification of that set forth in specification No. 270,476 [see "JOURNAL," Vol. 178, p. 693], which described an open grate for burning coke and like fuels in which a flue from the underside of inclined fire-bars extends upwardly into a chimney behind a back-plate, and the space between the upper edge of the back-plate and the front of the chimney opening is adapted to be wholly or partially closed by a swinging canopy, and a space below the fire-bars is closed by an ash-pan having one or more controlled openings to admit air below the fire-bars if desired. The grate is adapted to be fitted into an existing hearth in place of the ordinary coal-burning grate; or it may be built into a special hearth.

The object of the present invention is to modify the above in such a manner that it can readily be fitted to hearths of the modern type in which no canopy is employed; the whole of the hearth being frequently formed of fireclay and tiles. The necessary modification is effected without reducing in any way the efficiency of the grate, and very effective control of the rate of combustion of the coke in the grate is obtained.

The back-plate is extended up into the chimney opening, and the plate or a part thereof is pivoted about a transverse axis and is employed to control simultaneously the effective area of the openings into the chimney from the spaces above and below the fire-bars. Any convenient means may be provided for operating the back-plate and for setting it in any desired position to control the rate of burning. Preferably a stop is provided to prevent the plate from entirely closing the front opening into the chimney, so that there is always a passage for any fumes rising from the fuel.

Where it is desired to fit the improved grate to an existing fireplace, it may be built up to fit; but as this may involve a considerable amount of fitting, the grate may be made as a self-contained unit which is simply slipped into place.

Burners.—No. 297,540.

RADIATION LTD., of Birmingham, and YATES, H. J., of Grosvenor Place, S.W. 1.

No. 19,282; July 20, 1927.

This invention relates to atmospheric gas burners in which the nipple and mixing tube are arranged with their axes horizontal, the nipple is located at a short distance from the open end of the mixing tube, and a cover piece, or cowl, is provided over the upper side of the space between the nipple and tube; the cowl being formed integrally with the mixing tube. The cowl is provided to prevent upward leakage of gas past the open end of the mixing tube under conditions of low gas velocity; but the patentees point out that it tends to introduce other difficulties—for example, a fluctuating flame.

The patentees further remark that the cause of this unsteadiness has not hitherto been understood, and its explanation has involved much experimental research; but they have found that the dead space between the axis of the gas jet and the underside of the cowl interferes with the necessary aerodynamic conditions at the mouth of the mixing tube.

According to the present invention, therefore, the cowl and adjacent portion of the mixing tube mouth is formed so as to avoid a dead space above the axis of the gas jet. Also, according to the invention, the under surface of the cowl and of the adjacent portion of the mixing tube mouth is formed so that the end near the nipple is brought as near to the axis of the gas stream or jet as is practicable, and so as to rise and merge gradually into the throat of the mixing tube.

Gas Generating Plants.—No. 297,568.

TULLY, A. V., of Newark-on-Trent.

No. 24,016; Sept. 12, 1927.

This invention, which refers to gas-making plant of the well-known superimposed retort type, has for its object to provide means for causing the fuel in the retort to be kept in a sufficiently loose condition to allow the hot ascending water gas to pass upward through the mass of the fuel and ensure effective carbonization thereof, and the gradual descent of the resulting coke into the gas generating chamber below. A further object is to provide means whereby hydrocarbon in a liquid, semi-liquid, or solid pulverized condition can be admitted to the retort, or other part of the generator, where the fuel is at a sufficiently high temperature to crack the hydrocarbon and convert it into gas for the enrichment of the ascending water gas.

This is effected by one or more tubular poking or stirring rods arranged within the fuel in the retort, and provided, external to the retort, with an inlet for admission of hydrocarbon or steam. The movement of rods is effected by operating means connected to the mechanism used for controlling air and steam valves of the plant. Alternatively, the rods may be connected to the fuel feeding device of the generator, whereby movement of the feeding device and rod will take place simultaneously. Or the rods may be moved manually.

Each rod is provided with a regulated outlet at its lower extremity, or is perforated along a portion of its lower end, and at its upper end is connected to a pipe for the supply of steam or air to the rod, and for cleaning.

The rods are provided with external projections to facilitate the stirring of the fuel in the retort.

The invention is fully described with reference to drawings.

Washing, Drying, and Chemical Treatment of Crystals.—No. 297,630.

WILTON, T. O. & N., and THE CHEMICAL ENGINEERING & WILTON'S PATENT FURNACE CO., LTD., all of Victoria Street, S.W. 1.

No. 2844; Jan. 28, 1928.

In specification No. 235,613 [see "JOURNAL," Vol. 171, p. 233] was described a conveyor-drier adapted for the manufacture of sul-

phate of ammonia, in which the salt is conveyed, by means of a conveyor of the belt, band, or chain type, through a plurality of chambers, in which the salt is successively neutralized, freed from excess moisture, and finally automatically delivered to a drier. Means were provided for removing the moisture by exhaustion or hot air passed through the layer of salt on the conveyor, for heating, and for agitating the salt while on the conveyor, if desired.

The patentees now propose an improved conveyor of this type, consisting in an endless woven wire belt of material suitable to resist both chemical corrosion and the strain of repeated bending over the end rollers or drums. The useful portion of the conveyor is enclosed in a chamber, which, if desired, may be divided by suitable partition walls into a plurality of chambers, according to the requirements. The idle portion of the conveyor proceeds back inside a trough filled with water (or other suitable liquid) for the purpose of washing it and cleaning the meshes of the wire from any material clogging it. A sloping tray is disposed under the belt, to collect the liquid dripping from the material on the belt through the meshes and carry it off either to waste or back to the manufacturing plant —as, for example, would be done in the case of the liquor from sulphate of ammonia. Nozzles, sprinklers, or other like known devices may be disposed to supply water or other washing liquid, air, or chemical reagents, as may be required. These devices may be used, in conjunction with heating means, for supplying hot water for washing, hot air for drying, or for hot chemical treatment.

Suction devices are provided for enhancing the circulation of the air—or other gas or gases, in the case where chemical treatment is being performed—or the removal of the washing liquid, or for collecting the liquid resulting from any particular reaction, either for returning to the manufacturing plant or for recovery of valuable bye-products. For example, in the neutralizing of sulphate of ammonia, the liquor, containing pyridine, may be extracted at a suitable point and sent directly to recuperators for treatment having in view the recovery of the pyridine. Stirrers, either fixed or movable, may be provided to churn the material being conveyed and enhance its contact with the washing liquid, drying gas, or reagent.

The conveyor is used in connection with any known type of charging or discharging device; and it is, of course, provided with tightening device, guiding and supporting rolls, speed regulator, &c. The conveyor itself is preferably constituted by a belt made of woven wire of Monel metal; but other metals can also be used.

A drawing accompanies the detailed description.

Base Portions of Shells of Waterless Gasholders. No. 298,053.

R. & J. DEMPSTER, LTD., KNIGHT, H. S., and HUBBARD, W. S., all of Manchester, and WATERLESS GASHOLDER CO., LTD., of Rood Lane, E.C. 3.

No. 11,079; April 14, 1928.

It has been proposed to render the foundation of a waterless holder impervious to gas by providing a sealing liquid on the surface of the same, into which the annular drain cup or pocket depends. The object of the present invention is to dispense with the use of plates extending wholly across the floor area, but retain some portion of said plates, and yet provide means whereby a gas-tight and effective connection between the shell parts and the foundation may be obtained.

For this purpose the patentees use a restricted area of metal plating or equivalent for the flooring; and at the inner extreme portion they provide a depending wall or metal sheeting all round, dipping into a well or lute of suitable depth, containing sealing liquid or sand. This depending wall is also extended upwards above the level of the flooring.

The shell and part-flooring named rest upon, and are attached to, a suitable foundation, such as concrete, which may have passages in it for allowing of access to the inlet and outlet pipes, and for other reasons.

For ensuring a gas-tight joint at the base of the shell and parts under the conditions named, the space within the depending wall and upward extension thereof may contain a thin solution of tar or sealing medium named. In addition, exposed parts of the area of the foundation level are coated with some protective substance, such as pitch.

Extractor Gear for Retorts.—No. 298,093.

GAS LIGHT AND COKE COMPANY, of Horseferry Road, S.W. 1, and HOLDWAY, S., of Fulham, S.W. 6.

No. 8179; March 28, 1927.

The specification of this patent covers eight pages of the familiar form, has twenty-seven claims appended to it, and is described in connection with eleven drawings.

The objects are to provide extractor gear driving means of improved, simplified, and more economical construction than heretofore, and to effect a useful increase in the efficiency and output of the gas-making plant. The improved apparatus is designed to occupy a minimum of space, to effect economy in power consumption and maintenance costs, to be suitable for any power that may be available, to be more adaptable as regards its setting in relation to the retorts, permitting the apparatus to be used in the middle of the operating line if desired, to enable the working stroke of the apparatus to be readily varied to suit any particular setting of a line of retorts, and, if desired, to enable a slower or faster stroke to be obtained in one direction than in the other. Further, any repairs to, or breakdown of, plant need only affect or put out of action the section depending on that part of the plant broken down.

Gas Meters.—No. 298,099.

METROPOLITAN GAS METERS, LTD., and FORSTER, J. D., both of Nottingham.

No. 16,509; June 21, 1927.

This invention relates to meters of the kind in which the supply of gas is automatically cut off after a predetermined quantity has passed, and indicated by a pointer working over a graduated dial. The object of the invention is to provide means whereby the pointer is prevented from being fraudulently moved beyond a predetermined position on the dial.

To this end the meter is provided with a stop arranged to be set at a predetermined position on the dial for the purpose of arresting the movement of the pointer at that position and with means for locking the stop against movement or locking a protective device enclosing the said stop.

In a suitable arrangement there may be a second pointer for use in connection with the dial and arranged behind the main pointer; the enlarged inner end of the second pointer being provided with a hole to enable it to be passed over the spindle to which the main pointer is subsequently secured in the usual way, and to receive a hollow screwed stud which also passes over the spindle and screws into a hole in the meter casing. A head on the stud clamps the second pointer in any position to which it may be adjusted around the dial. This second pointer is provided wth a pin or projections standing out therefrom and forming the stop for the main pointer.

A detailed description of drawings of various modifications are given.

No. 298,265.

No. 17,989; July 6, 1927.

The patentees point out that the construction of mechanism described in the former specification, while giving excellent results when applied to a meter of the closed top type, is not so suitable for meters of the open top type in which the mechanism and index are partitioned off from the gas chamber. The object of this later invention is to adapt indicating mechanism of the kind described in the former specification to meters of the open top type.

Thermostats.—No. 298,293.

BRITISH BRASS FITTINGS, LTD., and SPERRYN, G. N., both of Birmingham.

No. 19,233; July 20, 1927.

The object of this invention is to provide improved adjustable means for the expanding tube and rod, whereby thermostatic controls of standard construction and provided with indicator dials previously set for a definite opening of the valve for any given reading, may be adjusted accurately in a simple manner for use with ovens of any design or for correcting or modifying the original setting as desired. The improved adjusting device is cheap to produce, and may be easily adapted to existing controls.

Accordingly, the movable abutment for the rod, which is in the shape of a screw cap and engages a screw-thread on the extremity of the tube, so as to permit the effective length of the tube to be altered, is formed externally with flats upon which numbers are marked for use in conjunction with a fixed indicator or arrow on the tube, so that the adjustable abutment may be set accurately according to requirements. The cap is advantageously octagonal; and a locking ring is provided for locking the cap against movement, once it is set.

Scrubbers.—No. 298,360.

SPENCER, S. E., of Elland.

No. 26,019; Oct. 3, 1927.

The object of this invention is an improved construction of the trays in tower scrubbers, by the relative arrangement of the scrubber boards and battens or thicker bars thereof whereby the bolts normally holding them together are dispensed with, and the battens are adapted to be directly supported by the battens of the tray immediately beneath, so making provision for the customary space between the tiers of trays, and for more easily and quickly emptying and refilling the scrubber.

The invention consists in the relative arrangement of spaced battens, of greater depth than the scrubber boards, and separate bundles of scrubber boards, whereby each layer of battens and the boards rest upon, and are separately supported by, the spaced battens of the tray immediately below. For this purpose, when requiring to fill the scrubber, a number of strong or main battens arranged on edge a suitable distance apart are adapted to stretch across the scrubber with their ends resting upon the internal annular flange. A set of secondary battens somewhat less in thickness is next spaced upon the preceding set of battens but at right angles thereto, and the spaces between these battens are filled with bundles of the customary notched scrubber boards also resting upon and supported by the battens immediately below. This alternate arrangement of the tiers of supports and scrubber boards is continued to a height of from 10 to 15 ft., according to requirements, where a further wrought-iron ring flange carrying a further set of main battens is secured to the scrubber.

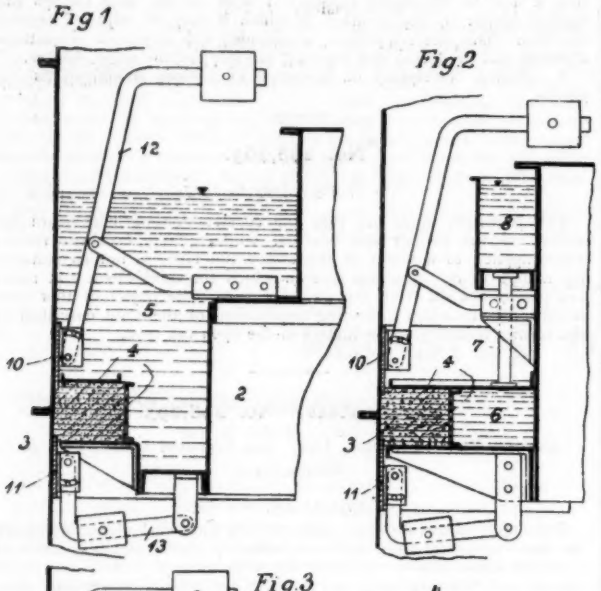
Waterless Gasholders.—No. 298,451.

Marks, E. C. R., of Lincoln's Inn Fields, W.C. 2.
No. 10,996; April 13, 1928.

(A communication from the M.A.N. Company, of Nüremberg.)

The patentees remark that, in using a seal of felt or woven material, there is a danger that through the upward and downward motion of the disc the edges of such a soft seal will be subjected to undue stresses, that the fibrous material will become abraded, rolled up, and entangled at the edges, and that they will thus become prematurely worn away, resulting in leakages. The present invention has for its object to overcome these disadvantages.

According to the invention, above and below the soft seal, metal plates or the like are provided, which slide on the wall of the holder and are guided upwards and downwards together with the seal. On these plates rest the edges of the sealing pad proper, which are thereby protected from damage and premature wear. The plates extend around the entire periphery of the seal, and are overlapped where they join so that they form an uninterrupted support for the edges of the pad forming the sealing. In order that they shall always rest closely against the wall of the holder, they are kept forced outwardly by other devices which are similar to the known devices for supplying pressure to the seal itself.



Seal for Waterless Holders.

Figs. 1, 2, and 3 are vertical sections through three seals according to the invention, which differ only in the construction of the sealing pad itself. Fig. 4 is a horizontal cross-section through the shell of a holder showing the supporting plates according to the invention and the means for pressing them against the shell. In this figure the seal itself is omitted for the sake of clearness.

In the various figures, 1 is the shell and 2 the disc. The soft seal 3 consists in all cases of layers of felt or the like which are secured in their correct position by a holder 4. In fig. 1 a channel is provided around the edge of the cover, which channel is filled almost to its upper edge with a filling 5 of oil or some other suitable substance.

In fig. 2 the arrangement consists of an annular channel 6 with a pipe 7 and a container 8 for supplying lubricating or sealing materials to the pad 3 of the seal. In fig. 3 the bent-over ends of the layers of felt extend into a channel 9, from which they are soaked with oil or some other suitable substance. For pressing the sealing pad 3 against the wall of the container, separate arrangements may be provided, not shown in the drawing—for instance, weight-loaded levers, springs, and the like.

Above and below the sealing pad 3 the sheet-metal plates 10 and 11 respectively are arranged, against which the upper and lower edges of the soft seal rest. The plates 10 and 11 are kept pressed by the loaded levers 12 and 13 against the wall of the holder, and slide upwards and downwards with the whole of the seal and the covering plate. During the motion of the cover they protect the edges of the seal from becoming bent and entangled and from consequent premature wear.

Fig. 4 shows how the upper and lower plates 10 and 11 are joined in the peripheral direction of the holder. At the joints they are overlapped, so that the edges are uninterruptedly supported even when the ring formed by all the plates 10 or 11 has to expand due to inequalities in the form of the holder.

The new invention can obviously also be applied in such cases where separate means for supplying a liquid acting as a lubricant or improving the action of the sealing are not provided, as shown in figs. 1 to 3—that is, in dry seals proper.

Geysers.—No. 298,394.

Barralet, J. H., and New Geysers, Ltd., both of City Road, E.C. 1.
No. 31,028; Nov. 18, 1927.

(Patent of Addition to No. 238,678; July 24, 1924.)

This invention for improvements in geysers has for its object to facilitate access to the interior of the base portion of a geyser and the burners contained therein for cleaning purposes, and is a modification of invention No. 238,678 [see "Journal," Vol. 171, p. 818].

While the main body portion of the geyser is supported in the manner described in the prior specification, at a suitable distance above the base by means independent of the fret which surrounds the burner, the said lower portion or fret is formed of arcuate parts or segments of a circle so mounted between the body of the geyser and the base that they can be slid one around another in a circular path.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for Oct. 24.]

Nos. 29,618—30,440.

Allott, G. W.—"Joints for covers for gas purifiers." No. 29,988.
Carr, R. H.—"Production of low-temperature coke." No. 30,403.
Gardener, J. H.—"Device for deflecting heat from gas burners." No. 30,250.
Miles, R.—See Allott, G. W. No. 29,988.
Newton, Chambers, & Co., Ltd.—See Allott, G. W. No. 29,988.
Perier, M.—"Gas burners." No. 30,266.
Pintsch Akt.-Ges., J.—"Apparatus for generating water gas." No. 29,745.
Seyler, C. A.—"Manufacture of coke." No. 29,834.
South Metropolitan Gas Company.—"Steam boilers." No. 30,181.
Watson, C. B.—See Carr, R. H. No. 30,403.

[Extracted from the "Official Journal" for Oct. 31.]

30,441—31,255.

Eyers, A. A.—"Self-blowing gas burner." No. 30,746.
Glover & Co., Ltd., T.—"Gas meters." No. 30,491.
Griffith, C. C.—"Gaskets for high-pressure gas joints." Nos. 30,979, 30,980.
Hoyle, D. G.—See Glover & Co., Ltd., T. No. 30,491.
Jeanneret, B. H.—"Automatic ignition installation for gas stoves." No. 31,121.
Keith, G.—"Low-temperature carbonization of coal." No. 30,975.
Keith & Blackman Company, Ltd., J.—See Keith, G. No. 30,975.
Low-Temperature Carbonisation, Ltd.—"Distillation retorts." No. 30,844.
Parker, C. H.—See Low-Temperature Carbonisation, Ltd. No 30,844.
Pell, A.—"Gas lighter." No. 31,168.
Pinnell, C. H.—"Gas fittings." No. 31,172.
Pintsch Akt.-Ges., J.—"Processes for quenching coke." No. 30,481.
Porter, R. E.—"Gas burners." No. 30,489.
Semet-Solvay Engineering Corporation.—"Gas generators." No. 31,069.
Whitehouse & Co., Ltd., W.—See Pinnell, C. H. No. 31,172.
Wilson, W.—"Purification of gas." No. 31,041.
Wood, H. M.—See Pell, A. No. 31,168.

Anglo-Scottish Coal Carbonization Trust was registered as a public Company on Oct. 29, with a nominal capital of £1000 in 1s. shares, to acquire mining rights and metalliferous land in Great Britain or elsewhere, deal in coal and other materials, manufacture and deal in patent fuel, and manufacture chemicals, manures, dyes, and gas, &c.

Gas Fires on Wheels.—A novel gas fire advertisement has made its début in the streets of Nelson during the past week. Three gas fires, properly inset and complete with mantels, are fed with gas from storage cylinders; the whole being mounted on a light lorry, which makes a nightly round of the main thoroughfares. From inquiries already received, the idea promises to be highly successful.

MISCELLANEOUS NEWS.

GAS COMPANIES' PROTECTION ASSOCIATION.

ANNUAL GENERAL MEETING.

The Thirty-First Annual General Meeting of the Association was held on Friday, Nov. 2, in Caxton Hall, Westminster, under the Chairmanship of Mr. R. W. EDWARDS, of Aldershot (the Vice-Chairman), in the absence of Dr. Charles Carpenter, C.B.E., President of the Association and Chairman of the Committee.

Among those present were Messrs. Ernest Ablett (Swansea), G. W. Anderson, R. Bruce Anderson, R. J. Auckland (Cardiff), C. F. Botley (Hastings), A. W. Brookes, W. Ellis (Chichester), E. J. K. Fussell (Tottenham), D. H. Helps (Reading), W. Phillips (Luton), George Stevenson (Long Eaton), W. W. Townsend (Colchester), A. G. Williams (Wolverhampton), and G. M. Willmott (Wandsworth).

The VICE-CHAIRMAN said he had looked forward to Dr. Carpenter being with them, but at the last had been disappointed to hear that he was suffering from a chill.

The ASSISTANT SECRETARY (Mr. R. G. Cooper) read the notice convening the meeting and the minutes of the last meeting, which were confirmed.

The SECRETARY (Mr. F. E. Cooper) announced the receipt of some letters of apology for absence.

ANNUAL REPORT.

The annual report of the Committee was in the following terms:

The Committee have pleasure in presenting the revenue account and balance-sheet, together with a report of the proceedings for the year ended Sept. 30, 1928.

The ascertained expenditure amounted to £401 7s. 6d. The revenue was: Subscriptions, £491 8s.; interest on War Loan, £85, amounting together to £576 8s., leaving a surplus for the year of £175 os. 6d. From the balance-sheet it will be seen that the assets amount to £2383 14s. 3d., consisting of £1700 5 p.ct. War Loan, 1929-47, at cost, £1626 1s. 11d. (the value of which at the date of this report is £1753 2s. 6d.); balance at bank, £751 12s. 1d., and cash in hand, £6 os. 3d. Since Sept. 30, 1927, £28 7s. in respect of the subscriptions then in arrear has been paid, leaving only £4 4s. outstanding. The amount outstanding in respect of unpaid subscriptions for the year covered by the accounts is £32 os. 6d., of which the sum of £5 15s. 6d. has been received since the closing of the accounts.

The Committee, acting in association with the National Gas Council, has given further close attention to the matter of the proposed amendment of gas legislation, now before the Board of Trade, which was referred to in the last report of the Committee. A Sub-Committee to consider these proposals, appointed by the National Fuel and Power Committee of the Board of Trade, invited the Association to submit for its consideration any observations that the Association might have to make in the matter. Subsequently the Vice-Chairman and the Secretary had an informal interview with the Director of Gas Administration for the purpose of discussing the separate proposals put forward by the Association, viz.: (1) "Stand-by" supplies of gas (similar provision to Section 23 of the Electricity (Supply) Act, 1922); (2) price of gas to public lamps (similar provision to Clause 34 of the Schedule to the Electric Lighting (Clauses) Act, 1899); (3) power to the Board of Trade to dispense with the Auction Clause in cases approved by them; and (4) minimum or basic dividends. The Director of Gas Administration expressed his approval of the first three proposals. As regards (4), he was not prepared to make a definite statement. As regards the proposal that amending gas legislation should provide for alternative methods of charging for gas, the Committee was of opinion that the adoption of such methods should be optional to the company concerned, and not compulsory.

The Committee has had under consideration the question of the use of ferro-concrete in the construction of roads and the heavy expense imposed upon gas companies in connection with their mains and services where this form of road-making is adopted. The Committee was of opinion that, when Road Authorities were asking for loans or contributions towards the cost of re-making existing roads with ferro-concrete, it should be made a condition by the appropriate Government Department that the Gas Companies affected should be repaid the cost of removing, renewing, or replacing their mains and services, and that, if necessary, the amount of the loans or contributions should be increased so as to cover such cost. On the direction of the Committee, letters expressing these views were sent to the Ministry of Health and to the Ministry of Transport. The Ministry of Health stated in reply that the Ministry had no authority to proceed in the manner proposed, but that the suggestion had been noted for consideration should relevant legislation be at any time introduced into Parliament. The Ministry of Transport replied that the experience of that Department did not lend support to the suggestion that special conditions should be attached to grants from the Road Fund towards the cost of carrying out the works in question.

The Committee followed with interest the proceedings on the Private Bills promoted by the South Suburban Gas Company and the Dover Gas Company, seeking powers to charge for gas on the basic price system. The Bills were referred to a Joint Committee of both Houses of Parliament. The Committee of the Association, being convinced that the said system provided an effectual safeguard against defects in the ordinary sliding-scale system, passed a resolution embodying these views, and a copy of the resolution was forwarded to the promoters of the Bills. The proceedings before the said Joint Committee, presided over by Lord Chalmers, resulted in the complete justification of the basic system, and the Bills in due course received the Royal Assent. The Petition of The Institution of Gas Engineers for the grant of a Royal Charter was considered by the Committee, and a resolution approving it was unanimously passed and a certified copy forwarded to the Secretary of the Institution. The Income-Tax Sub-Committee has proved very useful to members during the year under review. Some of the questions which came before it were of a somewhat unusual kind. One was the case of a member-company which had absorbed a neighbouring undertaking, whose works the company had closed down. Subsequently the Company removed some purifiers from the disused works to its own gas-works. The Inspector of Taxes refused to allow the cost of the removal and re-erection of the purifiers as a deduction against revenue, on the ground that it was an improvement. In this case the Sub-Committee advised an appeal against the Inspector's decision. The Committee would be glad to hear of any similar case that may arise. Another question was with regard to a claim for depreciation allowance for income-tax purposes in respect of certain buildings which had become obsolete. The question was whether the buildings could be included in the category of "plant" under Section 18 of the Finance Act, 1919. The point was discussed by the Sub-Committee, and the company affected advised as to the course which it should adopt. These cases are referred to in this report to draw attention to the useful "spadework" done by the Income-Tax Sub-Committee of the Association. Owing to the notoriously complicated nature of income-tax law, points of the kind above referred to are constantly arising, and, when faced with difficulties with the Inland Revenue authorities, companies should at once avail themselves of the assistance of the Association through the Income-Tax Sub-Committee, which is one of the most valuable privileges of their membership. In December last, Mr. C. F. Botley, representing the Association, together with Mr. Ogilvie, of the National Gas Council, had an interview with Sir Ernest Gowers, K.B.E., the Secretary of Inland Revenue. Amongst the matters discussed at this meeting was the question of costs incurred by gas companies in the promotion of Bills and Special Orders for other than capital purposes which, it was stated, would not in future be allowed as deductions for income-tax. This was a definite reversal of the policy of the Board of Inland Revenue and, when an occasion arises, may have to receive further consideration of the Committee.

During the year under review the Secretary has had considerable correspondence and many interviews with members on legal and technical points connected with the industry, the following being some of the principal matters upon which he has given information and advice: Obsolescent plant—income-tax claim; statutory company becoming non-statutory; explosion of gas in pillar box; disposal of surplus water; assessment of gas-works; appointment of managing director; repayment of principal moneys secured by mortgages; income-tax—cost of special orders; many points on the Rating and Valuation Act, 1925; liability of receiver for gas rents in arrear; stealing cash from prepayment meters; voting in respect of preference stock; liability of director resigned, as joint and several guarantor of bank overdraft; disappearance of shareholder—claim to back dividends; conjoint conference of Public Utility Associations; consumer's liability for meter, &c., damaged by fire; superannuation fund; mains under level crossings; application of special purposes fund; payment of arrears of dividend; gas supply under guarantee; public lamps depreciation; Companies Bill; basic price and basic dividend; re-making of roads with ferro-concrete; assignment of hire-purchase agreements; cost of removal of gas main in case of road widening by county council; liability for damage by company to grate in fixing gas fire; issue of loan capital at discount; issue of perpetual debenture stock; damage to street lamps; income-tax—depreciation allowances.

The following members retire from the Committee, in accordance with Rule 12: Mr. C. M. D. Belton, Mr. Ralph Halkett, Mr. W. Phillips, Mr. G. Stevenson, Mr. W. W. Townsend, and Mr. W. F. Whittaker, all of whom offer themselves for re-election.

ADDRESS BY THE VICE-CHAIRMAN.

The VICE-CHAIRMAN, in moving the adoption of the report of the Committee and the accounts for the year ended Sept. 30, said: First of all I should like to voice, both on your behalf and on my own, the regret which is felt at the unfortunate absence of Dr. Carpenter, than whom there are few indeed in the gas industry more capable and more respected. The revenue account and balance-sheet for the year in question present a most satisfactory appearance. The ascertained expenditure was £401, and the revenue £576, showing a surplus for the year of £175; while our assets total £2383, including £1700 of 5 p.ct. War Loan and a bank balance of over £750. Since the closing of the accounts, a further £500 of War Loan has been purchased, at a total cost of £517. Since the date of the report, a further sum in respect of subscriptions in arrear has been received, leaving only £13 13s. outstanding in respect of the year under review.

PROPOSED AMENDMENT OF GAS LEGISLATION.

Turning to the work of the Association as summarized in the annual report, we find that, as usual, this accurately indicates some of the problems of the gas industry—and not least in that the main item is concerned with the proposed amendment of gas legislation, a question so vital to all of us that I may be excused for enlarging thereon at some length. The first thing I should like to do is to take advantage of this opportunity to assure the National Gas Council of our hearty co-operation in all the efforts which the Council are making, and may make, to procure amendment in the existing legislation, provided that such efforts are directed towards the freeing of the industry from its legislative fetters. In a letter which appeared in "The Times" on Oct. 16, Sir David Milne-Watson pointed out the iniquity of present-day gas legislation—legislation passed to protect consumers against a monopoly, which nevertheless continues to restrict the industry despite the fact that circumstances have so changed as to lay it open to the keenest, and, some think, not always the fairest, competition.

Three lines along which in particular the gas industry requires "greater freedom and facilities" are specified by Sir David Milne-Watson:

(*a*) Power to raise capital in accordance with modern commercial practice. The industry is at the present time so fettered by Statutes on the subject that it is often difficult, and in some cases impossible, for gas undertakings to obtain fresh capital upon advantageous terms.

(*b*) Amendment in the methods of charging for gas, particularly

with a view to giving greater encouragement to the industrial consumer.

(*c*) Amalgamation with other gas undertakings, and power to enter into joint working arrangements, either with one another or with allied industries. The economic and financial conditions which obtain to-day render it imperative that every facility should be afforded for co-operation.

Reform in all three directions is unquestionably essential; and such reform must be initiated by the gas industry as a whole. An important point, which must not be overlooked, however, is the method by which this amendment is to be obtained. Thus it should not be a case of exchanging one fetter for another; still less should it be one of advantage gained by large statutory undertakings at the expense of the smaller non-statutory undertakings.

THE ASSOCIATION'S SEPARATE PROPOSALS.

In addition to being in full accord with the National Gas Council, this Association have put forward certain separate proposals, in regard to which the Secretary and I had an interview with Mr. Ronca. These proposals comprised:

(1) Stand-by supplies of gas. Similar provision to section 23 of the Electricity (Supply) Act, 1922.
(2) Price of gas to public lamps. Similar provision to clause 34 of the Schedule to the Electric Lighting (Clauses) Act, 1899.
(3) Power to the Board of Trade to dispense with the auction clause in cases approved by them.
(4) Minimum or basic dividends.

As is stated in the annual report, Mr. Ronca expressed approval of the first three proposals, but was not prepared to make a definite statement in regard to the fourth. I now propose to make one or two remarks about each in turn.

STAND-BY SUPPLIES OF GAS.

So far as (1) is concerned, little need be said; for the advantage which we should derive from a general clause on the lines of section 23 of the Electricity (Supply) Act, 1922, will be amply demonstrated by merely reading through the provisions of the said section:

> . . . "A person shall not be entitled to demand or continue to receive for the purposes of a 'stand-by' supply only from any authorized undertakers a supply of electricity or a supply (in use or ready for use for the purposes for which the stand-by supply of electricity is required) of gas, steam, or other form of energy, unless he has agreed with the undertakers to pay to them such minimum annual sum as will give them a reasonable return on the capital expenditure incurred by them in providing such stand-by supply, and will cover other standing charges incurred by them in order to meet the possible maximum demand for those premises. The sum to be so paid shall be determined, in default of agreement, by arbitration."

PRICE OF GAS TO PUBLIC LAMPS.

Turning to (2), I may say that clause 34 of the schedule to the Electric Lighting (Clauses) Act reads:

> "Where the local authority are not themselves the undertakers, the price to be charged by the undertakers and to be paid to them for all energy supplied to the public lamps, and the mode in which those charges are to be ascertained, shall be settled by agreement between the local authority and the undertakers, and in case of difference shall be determined by arbitration, regard being had to the circumstances of the case and the distributing or other mains (if any) which may have to be laid for the purpose, and the prices charged to ordinary consumers in the district."

Such a clause as this would be of great benefit to all gas undertakings, more particularly in the light of the construction placed upon this clause in such cases as *Municipality of Buluwayo* v. *Buluwayo Water-Works Company* (1908, A.C. 241), and the Wycombe Borough case in 1917. In both these cases disputes as to the construction of agreements made under this clause were decided in favour of the electricity undertakers. In the Buluwayo case, the cost of generating the light (which was to be taken into consideration in fixing "the price to be charged by the undertakers and to be paid to them for all energy supplied to the public lamps") was held to cover that of all operations leading up to the production of the light in the street lamps, including transmission of the current. The other case dealt with the construction of a similar agreement under which the Wycombe Borough Electric Light and Power Company gave the right to the Corporation to deduct a certain sum in respect of each lamp unlighted, "from any cause whatever," from any payment to be paid by them under the said agreement. It was held that the words "any cause whatever" were intended to be limited to any cause over which the Company had control.

POWER TO THE BOARD OF TRADE TO DISPENSE WITH THE AUCTION CLAUSE.

The third proposal—that power be given to the Board of Trade to dispense with the auction clause in cases approved of by them—is one of great interest and importance. This clause frequently operates inconveniently to gas undertakings, except where there is a fairly free market. In this connection, might I repeat the suggestion made to me by a certain well-known firm of Stock Exchange advisers, that power be given to gas companies to sell in the open market, as well as "to offer for subscription by the public?" It seems to me that these words "to sell in the open market" should be written in gold letters. I do not pretend to be ignorant of the origin of the auction clauses and the bargain then made; but the instability of standard prices under section 1 of the Gas Regulation Act, 1920, has changed conditions.

MINIMUM OR BASIC DIVIDENDS.

Finally, that a minimum or basic dividend should be permitted to gas companies seems to me to be not only just, but also essential to their interests. As is pointed out by the National Gas Council, the industry suffered heavily in this regard during the war, and is still suffering from the results. The gas investor can never feel safe until this point is won.

METHODS OF CHARGING FOR GAS.

The Association were further of opinion that, in the event of amended gas legislation providing for alternative methods of charging for gas, the adoption of such methods should be optional to each company concerned, and not compulsory.

NECESSITY OF AMENDMENT RECOGNIZED.

That the necessity for amendment of existing gas legislation is not being lost sight of in parliamentary circles is demonstrated by the following paragraph, which appeared in the "Political Notes" of "The Times" a few days ago:

> "There is said to be a strong feeling among leading men in the gas industry that the Government should introduce, at a very early date, a small Bill to amend some of the existing legislation which, it is alleged, hampers the development of the industry. It is understood that the authorities at the Board of Trade are sympathetic to the scheme, but it is doubtful whether parliamentary time can be found for such a measure this session. It is stated, however, that the Bill would be entirely non-controversial, and would consist of four or five clauses only."

Any doubt whatsoever as to the zeal with which the National Gas Council are pursuing this question must be dispelled by an item which appeared in "The Daily Telegraph" yesterday. This, while repeating the fear expressed in the paragraph just quoted—lest parliamentary time would not permit of such a measure this session—states that the President of the Board of Trade has consented to receive, shortly after the opening of Parliament, a deputation from the National Gas Council on the subject of the amendment of existing gas legislation. Before leaving the general question of gas legislation reform, I may be excused for once again emphasizing the point that this reform is to be sought in the direction of greater independence from Government control—not in that of exchanging one type of Government control for another. The gas industry does not want to be the "child of the Government."

THE GAS INDUSTRY AND HIGHWAY PROBLEMS.

The report goes on to summarize the work of the Association in regard to the problem raised by the increasing tendency towards reconstructing roads in ferro-concrete. This is a subject on which I have spent a great deal of energy—I hope to some purpose. As I have already put forward my views on this matter through the medium of the "GAS JOURNAL," I do not propose to go into it again. There are, however, one or two salient points on which I should like to touch. In the first place, might I once more emphasize the urgent nature of this problem? To my mind, we must deal with it in the immediate future with patience and perseverance, which, I am confident, will meet with ultimate success; for the atmosphere appears more favourable, having regard to the fact that Sir Henry Maybury has indicated that the claims of public utility undertakers would receive consideration, while in a letter of Aug. 3 last, from the Ministry of Health, a like assurance is conveyed to us.

OTHER MATTERS.

As I have already made some reference to the question of the basic price, I need not further dilate upon it, except to say that the cases of the South Suburban and Dover Gas Companies clarify the position for future acceptance of the basic price; and here I might remark that we are indebted to the South Metropolitan Gas Company and their President, Dr. Carpenter, for their initial work in this respect.

The next point to which we come is the work of the Income-Tax Sub-Committee, who have done such useful service during the last year. As the motto of the Committee would appear to be "Be not weary of well-doing," and their main characteristic a desire to relieve the burdens—though not the pockets—of others, I think I shall shift part of my present task on to the capable shoulders of Mr. Botley, upon whom I will call to say a few words with regard to the work of the Committee.

The work of our Secretary has been of a varied nature during the period under review. In short, I might say that he has been called upon to advise with regard to a diversity of many interesting points—some of which can hardly be described in cold print. Otherwise one can scarcely claim that the past year has been one of outstanding character; for we have had no noteworthy fights, such as this Association have taken a prominent part in in the past history of our industry; but that the Committee are fully alive to safeguarding the interests of the gas companies needs no emphasis from me—excepting to say that we keep our powder and shot dry against emergencies. I need only add that I am deeply grateful to my colleagues for their support during the past year. I now have much pleasure in moving the adoption of the report and accounts for the year ended Sept. 30.

INCOME-TAX.

Mr. C. F. BOTLEY (Hastings), in seconding the motion, said he cordially endorsed the observations made by Mr. R. W. Edwards with regard to the letter which Sir David Milne-Watson had addressed to "The Times," on the subject of gas legislation. Sir David had there put the matter in a way in which it might well be left—with

the hope that it would have an effective response. Things were moving in the matter of gas legislation. It was perfectly ridiculous to have one large commercial industry of the importance of the gas industry bound hand and foot so to speak, while all its competitors could do just as they liked. It was an intolerable position. He also endorsed Sir David Milne-Watson's protest against the Government making use of their power to advertise electricity. A Minister who took up the cudgels on behalf of one industry against another was acting in a most unfair manner; but now he seemed to have a little compunction. In the matter of the basic price, they were primarily indebted to the South Metropolitan Company; but from the point of view of freedom of charging, the basic price was hedged round with certain restrictions. No one who wished to have a basic price and went to the Board of Trade to-day would be refused; but whether this was sufficient for those who wanted freedom in the matter of charge was another matter altogether. What they really required was freedom to charge any price which seemed fit to them. Under an Act passed many years ago, the Stockport Corporation had freedom in this respect which enabled them to devise a system of charging which had operated in a remarkably successful manner. As to income-tax matters, there had been a great deal of tightening up by the authorities, and he felt quite sure that a good many things were going by the board. The inspectors kept on introducing new points, and their activities certainly did require scrutinizing. He put the point as to whether it was advisable to have two organizations dealing with the same matter, without careful cohesion. In conclusion, he said he remembered with very much gratitude the work of this Association during his younger days; and he was convinced that it still did good work in many ways.

Mr. GEORGE STEVENSON (Long Eaton), in supporting the motion, said he greatly appreciated the work of the Income-Tax Sub-Committee. It seemed to him that the circumstances of statutory gas companies were in many respects essentially different from those of municipal concerns. He acknowledged the valuable help his own Company had received. With regard to the question of new legislation, it was up to the members to concentrate on this, and make the best points they could with their Members of Parliament. Circumstances were changing rapidly, and were likely to continue to do so; and therefore the sooner they could get the desired freedom, the better. The monopoly view of gas undertakings certainly ought to be eradicated. There was no monopoly to-day, and had not been for many years past. In fact, competition was likely to become keener as time went on. He hoped the Association would do the best they could, especially for the smaller undertakings, who found it somewhat difficult to raise capital. His own Company obtained permission to issue capital by subscription, which was a very good arrangement. The public did not suffer; and he was hoping the method might become general.

Mr. R. BRUCE ANDERSON (Waterford) remarked that the principal event during the past twelve months as affecting the gas industry in Ireland had been the passing of an Act to amend existing gas legislation. The Sales of Gas Act, in the matter of statutory testing stations, applied to only two companies in Ireland. In the other parts of the Free State there was no need for stamping meters at all. The Amendment of Gas Legislation Act now stipulated that the whole of the meters must be stamped within a certain period. Further, they had insisted that all the meters stamped by the Board of Trade should be restamped with the Free State stamp. More serious still, the Free State stamps were to be renewed every ten years. There had been a move in this country to take the same course; but the industry had satisfied the Government that it was not necessary. It would involve the gas undertakings in enormous expense. He suggested that the present was a suitable time to review favourably the Secretary's remuneration.

Mr. WILLIAM PHILLIPS (Luton) declared that there was now more reason than ever for the continued existence of the Association.

Mr. R. J. AUCKLAND (Cardiff) asked whether the members felt quite sure that if they pressed forward this matter of legislation during the present year they would get all they wanted. Mention had been made of a short enabling Bill. Would this give them everything they had in view? In Cardiff, they suffered under a disability in the matter of meters, which, as a matter of fact, they had to send for attention to a much smaller town.

Mr. A. W. BROOKES (British Gas Light Company) said the only fear he felt was whether, by pressing too eagerly forward with this legislation, they might not have imposed upon them some more restrictions, and so be in the end worse off than was the case now. After all, gas companies stood very well to-day.

The VICE-CHAIRMAN assured the members that the Committee were fully alive to the possibilities to which reference had been made by the last two speakers. They were all agreed that in the matter of income-tax Mr. Botley and his colleagues had been most enthusiastic. Having been connected with the Association for a number of years, it was his (Mr. Edwards') opinion that it was more necessary to-day than ever before. While they set themselves to work, wherever they could, in conjunction with the National Gas Council, it was not the intention of the Association that they should sacrifice in any shape or form their independence. The point raised by Mr. Anderson as to the remuneration of the Secretary would have the attention of the Committee.

Mr. ERNEST ABLETT (Swansea) said he would like to take the opportunity of acknowledging the great assistance which his Company had received from Mr. Botley, from the Income-Tax Sub-Committee, and from the Secretary, in the matter of a claim in connection with obsolescent plant.

Subsequently, Dr. Carpenter was re-elected President; and the Vice-Presidents (Messrs. Charles Hunt, Reginald G. Clarry, M.P., and A. A. Johnston) were re-appointed. The retiring members of Committee (Messrs. C. M. D. Belton, Ralph Halkett, W. Phillips, G. Stevenson, W. W. Townsend, and W. F. Whittaker) and the Hon. Auditors (Messrs. W. A. Scott & Co.) were also re-elected; and the proceedings terminated with acknowledgment of the services of the Vice-Chairman, the Secretary, and the Assistant Secretary.

"regarded as standard."

KIRKE
PATENT WASTE HEAT
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GLOVER-WEST VERTICAL RETORTS
ALL OTHER MAKES OF VERTICAL RETORTS · HORIZONTAL RETORTS
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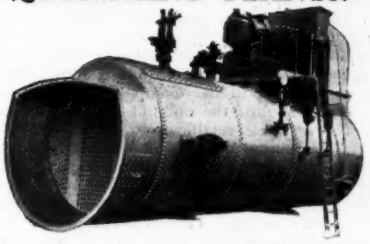

British Waste Heat Boiler
*Patents No. 130234 140851** 172752, 186801*, etc.*

HERE
is part of an edifying conversation heard recently.

Chief Engineer of a Gas Company enquiring of another as to the points of Kirke Patent Waste Heat Boilers:

"Do you find the upkeep of these boilers expensive and do they pay?"

Chief Engineer of Gas Company already using Kirke Waste Heat Boilers:

"I put in two of them about three years ago and two more about two years ago. I haven't spent a sixpence on repairs and we have got back our capital 5 to 6 times over already."

The point is: Can you afford to ignore the existence of such a boiler? Why not let us instal them on your settings also?

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Telegraphic Address: "BONECOURT, SOWEST, LONDON."

O & S

DOVER'S CO-PARTNERSHIP SCHEME.

Inauguration Celebration.

To inaugurate the Co-Partnership Scheme recently sanctioned by Act of Parliament, in the Dover Gas Act, 1928, the Directors of the Dover Gas Company gave a supper to the staff and employees at the Maison Dieu Hall, Dover, on Oct. 25, when Mr. E. M. WORSFOLD, J.P., the Chairman of Directors, presided. All the Directors of the Company were present, together with Mr. H. T. Manley (Employee Director of the South Metropolitan Gas Company) and Mr. F. Day (Secretary of the South Metropolitan Gas Company).

The CHAIRMAN, after referring to the occasion as an historic event in the annals of the Company, went on to explain the objects of the scheme, and the details of working. In 1889, he said, Sir George T. Livesey, Chairman of the South Metropolitan Gas Company, considering it advantageous to all parties, originated a co-partnership scheme whereby all employees under agreement with the Company benefited in improved profits, as well as the shareholders and the consumers of gas. The Directors of the Dover Gas Company, being of the same opinion, and being empowered by the new Act of 1928, had decided that their employees should benefit by improved results. The Act provided a basic price—13d. per therm—for gas, and the Directors made a budget every year with a view to seeing how far they could benefit the consumers, the employees, and the shareholders. Where there were surplus profits, three-fourths of the amount went to the consumers—that was to say, it was applied to reducing the price of gas. The remaining one-fourth was divided equally between the employees and the shareholders. The real position was that on any surplus profits the employees went fifty-fifty with the shareholders; this being in addition to the standard wage paid to the employees. Their bonus was calculated as a percentage of the total amount paid in salaries and wages. One-half of the bonus was to be invested in the Company's ordinary stock in the names of the Trustees until the amount credited to any co-partner was sufficient for a stock certificate to be issued to him in his own name. The remaining one-half of the bonus was to be left in the Company's hands to accumulate (the Company bearing interest at the rate of 5 p.ct.), or it might be invested in stock with the Trustees, or it might be withdrawn—in special circumstances only—by giving a week's notice. The Trustees of the Co-Partnership Fund would be the persons who were, for the time being, the Employee Directors elected under the provisions of the Dover Gas Act, 1928. The objects of the scheme were to induce all the employees to take a real interest in their work by giving them a new motive for endeavouring to promote the prosperity of the Company, and (equally important) to give them an opportunity to improve their position in life by saving their annual bonus and becoming owners of property in the stock of the Company. This scheme, he believed, would enable them to become members of a wonderful combination, consisting of happy consumers, enthusiastic employees, and contented shareholders. That, he thought, was one of the ideals in this life.

Mr. H. T. MANLEY, in explaining how the scheme had worked (from the employees' point of view) in the South Metropolitan Company, emphasized the fact that the employees of the Dover Company were entitled legally by Act of Parliament to their bonus, whereas in many cases it was within the discretion of the Directors either to suspend or totally to stop payment of bonus. He also urged the employees on no account to touch their accumulated bonus, as the whole object of the scheme was, from their point of view, an insurance against old age. The latter point was also urged by other speakers.

GAS SUPPLY COMPANY, LTD.

Annual Meeting in Melbourne.

The Second Annual Meeting of the Gas Supply Company, Ltd., was held at the offices of the Company in Melbourne, on Monday, Sept. 17—Mr. R. A. SCHUCHARD, the Chairman of Directors, presiding.

The CHAIRMAN, in submitting the report and balance-sheet, said that the Company had purchased controlling interests in the Albury Gas Company, in N.S.W., and the Mackay and the Gympie Gas Companies, in Queensland; and that they now owned or controlled nine gas undertakings. He was pleased to be able to say that these amalgamations had proved satisfactory to all concerned.

The total profit for the year amounted to £10,582, and the sum recommended to be set aside for income-tax and renewal fund was £2180, and to reserve account £500. The amount of a dividend at the rate of 10 p.ct. per annum for the whole year on the capital employed was £7890. Though the price of coal had again risen, an increase in the price of gas had been avoided, while at Albury two reductions, amounting in all to 2s. 1d. per 1000 c.ft., had been effected, and at several other works discounts had been allowed. Over 500 new consumers were connected, and approximately 850 new appliances were fixed on consumers' premises.

The motion was carried on the recommendation of the CHAIRMAN, seconded by Mr. M. C. COATES; and a vote of thanks was extended to the Directors and staff.

In conclusion, the CHAIRMAN observed that this extension of the Company's business had involved a great amount of extra work; but he was glad to be able to say that, through the co-ordination and co-operation of all concerned, the utmost had been done by everyone in the interests of the Company throughout the whole of the organization.

In Class 2 of the Leamington Chamber of Trade Floral Scheme awards, the Leamington Priors Gas Company won the first prize by an easy margin.

A CO-PARTNERSHIP SCHEME EXPLAINED.

Address by Mr. A. M. Paddon.

On Nov. 1, Mr. A. M. Paddon, Chairman of the North Middlesex Gas Company, gave an address, at the monthly luncheon of the Industrial Co-Partnership Association at the Holborn Restaurant, on the subject of "Equal Shares of Profit." Dr. CHARLES CARPENTER, President of the South Metropolitan Gas Company, presided.

Mr. PADDON, giving an account of the co-partnership scheme adopted by his Company, said that the co-partners received as their share 10 p.ct. of the divisible profits. With regard to the method of distribution, they had aimed at simplicity and intelligibility by proposing that each co-partner should have an equal share. This was a divergence from general practice, and he did not say it conferred universal satisfaction; but it had met with more estimation than any other division of which he knew. They had to enlist the loyalty of a large number of men who were not closely associated with the administration, and the most money under this scheme went where it was most required. The men realized that more than an ordinary effort was being made to reach them and help them, and they had responded accordingly.

The allotment amounted in each case to about £10 a year, and was allotted through trustees. It had to be invested in the capital of the Company or held by the Company at a definite rate of interest. The only circumstances in which a co-partner got the money without question were if he was superannuated, if through ill-health he had to leave his employment, or if he obtained promotion elsewhere through his skill. If he died, the money was paid out at once. Where a man left his allotments to accumulate, with compound interest, he would have at the end of forty years a sum of £1500. A man could take his interest if he liked, but at the end of forty years he would then get only £450. Many did not take the interest. If a co-partner could get the capital and wanted himself to save it, his wife would not let him. Co-partnership on these lines enabled a man to save who otherwise could not do so.

A vote of thanks to Mr. Paddon was moved by Mr. E. L. BURTON, and seconded by Lieut.-Col. J. H. BORASTON.

PRINCIPLES AND PRACTICE OF STOKING.

A Lecture on Combustion and Smoke Abatement.

In connection with the Public Health (Smoke Abatement) Act, 1926, the Ministry of Health have suggested that smoke inspectors should be specially qualified by a course of training; and with a view to assisting candidates who are preparing for the post of smoke inspector, the Royal Sanitary Institute have arranged a course of ten lectures covering various aspects of the subject. The sixth lecture of this (the third) series was given at the Institute on Monday, Nov. 5, by Mr. E. W. L. Nicol, Assoc.I.E.E., M.I.Mar.E. (Engineer and Fuel Expert to the London Coke Committee), whose subject was "The Principles and Practice of Stoking."

In the course of his lecture, Mr. Nicol pointed out that smokeless combustion and efficient combustion are largely synonymous terms. The efficient combustion of coal, by whatever method attained, necessarily involves the prevention of smoke formation. The efficient combustion of bituminous coal is a complicated two-stage process, and in ordinary steam boiler practice is at best a compromise between the loss of heat units through incomplete combustion, due to insufficient air, on the one hand, and heat losses, due to excessive air supply, on the other hand. The waste of fuel due to excess air, caused by an honest endeavour to prevent smoke emission, aggregates many millions of tons a year; and by merely inflicting penalties for contravention of the Smoke Abatement Act now in operation, this source of loss to industry might be greatly aggravated. But that is neither the intention nor the spirit of the Act, one clause of which says "it shall be deemed a defence if it can be shown that, having regard to the cost, the best practicable means have been adopted."

The most practicable, and frequently the most economical, means is simply to substitute smokeless for smoky fuel; but in order to be in a position to advise a magistrate or a judge on this fundamental provision of the Act involves not merely a few months study of the subject, but an intimate knowledge of the many practical ways and means of preventing smoke emission, including a working acquaintance with all the fuels locally available, their relative cost and efficiency, together with a knowledge of their physical and chemical characteristics. Relative fuel efficiency may be defined as its "availability," or its capacity for being converted, by the process of combustion, from potential energy to useful high-temperature heat energy. Obviously, all fuels, whether solid, liquid, or gaseous, powdered, smokeless, or smoke-producing, are not equally efficient. More or less volatile, some require more, and others less, excess air to effect their complete combustion; and, infinitely more important, some give greater radiation than others. Their relative efficiency or availability for whatever purpose employed will vary accordingly. Among all solid fuels, coke probably possesses the highest radiant efficiency.

GAS REGULATION ACT APPLICATIONS.

SPECIAL ORDER.

Weymouth Consumers' Gas Company.

To extend the limits of supply by the addition thereto of the parishes of Chickerell and Preston, to authorize the Company to use scheduled land for gas purposes, to make fresh capital provisions, and for other purposes.

PUBLIC HEALTH AND THE SMOKE EVIL.

Smoke Abatement League's Appeal to Medical Officers.

The Smoke Abatement League of Great Britain has circulated to Medical Officers and Public Health Committees a memorandum dealing with the resolution passed at the conference of the League held last month, which was the outcome of the recent inquiry into the position of solid smokeless fuels. The resolution runs as follows: "This meeting of the Smoke Abatement League of Great Britain is of the opinion that the production of solid smokeless fuel is now upon a sound commercial footing, and it calls upon local authorities in general, and health departments in particular, to take steps to popularize the use of such fuels, and so help to solve the domestic smoke problem, in which work the League pledges itself to co-operate."

It is pointed out in the memorandum that public health authorities can do a great deal to help to abolish the domestic smoke problem. The holding of exhibitions, health weeks, lectures, and displays is advocated, together with the widespread distribution of literature. The League is preparing a number of pamphlets of a popular nature which will shortly be available for distribution in large numbers, and which will show the serious effects of smoke upon health, and how the bill for smoke is paid largely by the householder.

There are now several low-temperature fuels upon the market, which, as the recent report showed, are of excellent quality, and much superior to raw coal, as regards both cost and efficiency, while there is no comparison with regard to cleanliness. The gas coke produced from vertical retorts is of excellent quality; it will burn in the ordinary fire, and is exceptionally cheap. While the League's report dealt mainly with solid fuels, the health authorities are urged to place the advantages of gas and electricity before the public; and, in co-operating with their local gas and electricity undertakings, much valuable work could be done.

The memorandum closes by stating that "it is hoped that progressive health departments and municipalities, recognizing the gravity of smoke pollution, will take immediate steps to mitigate the evil, and so restore the atmosphere to that state of purity which is essential to the health of every city and town."

INQUIRY AT BINGLEY.

Proposed New Gas-Works.

An inquiry was held at Bingley Town Hall, on Oct. 31, into an application by the Bingley Urban District Council for power to borrow £55,650 for extensions of the local gas-works plant. Mr. G. Ewart Rhodes was the Inspector appointed by the Ministry of Health. Objections were raised by the Bingley Chamber of Trade (represented by Mr. H. M. Dawson), by Mr. S. Barker (representing a number of owners of property in the vicinity of the present gas-works), and by several individual ratepayers.

Mr. H. O. HILARY (Clerk to the Urban District Council) said that the sanction required was for what was virtually a new gas-works. The scheme had not been decided upon without very serious consideration, but the present storage capacity of the works was equal only to about half the maximum daily demand. This, admittedly, left no margin, even on present demands, for abnormal weather or accident. If no more than the present rate of increased demand were maintained, additional storage must be provided sooner or later, while if the provision of gas for fires, cookers, &c., developed, as seemed almost certain to be the case, increased storage capacity must be found very soon. The only part of the Bingley Council's area not supplied with gas from the Bingley Works, said the Clerk, was Wilsden, which at present was supplied by the Bradford Corporation; but the Bingley Council had power to purchase this part of Bradford's supply undertaking, and the Council desired to take advantage of that power, and supply Wilsden, as part of Bingley area, with gas at the same rate as it was being supplied to all other parts of the Bingley area. At present the price at Wilsden was 1s. per 1000 c.ft. more than the Bingley price. Until the gas-works were re-organized, this could not be done. Another important factor was that improvement in the plant was necessary to effect betterment in working conditions on the works. The Bingley Trades and Labour Council and the Bingley Women's Co-operative Guild had passed resolutions supporting the Council's application.

Referring to the opposition, Mr. Hilary observed that any argument that this project would affect the rates was wrong, because even if the undertaking did receive rate-aid, the amount would remain as a debt from the undertaking to the district fund; and never in its history had the Bingley gas undertaking been a burden on the rates. On the contrary, it had assisted the rates by paying half the amount of street lamp-lighting wages. The objectors, said the Clerk, contended that the present was not a time to do the work, and that it should be deferred to some future date. Unfortunately for this argument, the facts were rather that the application was already some twenty years overdue. The works had got to such a state of strain on capacity that there was risk of the total failure of the gas supply occurring at any time during the dark days of winter.

Replying to a question by the Inspector on the matter of local electricity supply, Mr. Hilary said that the electricity undertaking, like the gas undertaking, was remunerative. Both departments were doing well, and they seemed to advance side by side.

Councillor *Jabez Whittingham* (Chairman of the Bingley Urban District Council) said that in his view the modernizing of the gas-works was long overdue. Not only was extension imperative, but the works were actually almost derelict in some portions.

Councillor *Tom Snowden* (Chairman of the Lighting Committee) observed that since 1914 there had been an increase locally in gas consumption of no less than 23 million c.ft. The usual stunt of bluffing and frightening people was being tried by those who opposed, but had no knowledge of, the project.

In answer to Mr. H. M. Dawson, Mr. Snowden denied emphatically that the Council, basing their project on a present increased consumption and increased production, were gambling on gas occupying during the next thirty years the same position relative to electricity as it did to-day.

Mr. H. M. DAWSON, presenting the objections of the Bingley Chamber of Trade, said that all they asked was that every possible avenue should be explored to ascertain whether this big expenditure by the Council was absolutely necessary; and they urged that any alterations essential at the gas-works should be carried out at the lowest possible cost. He contended that the projected scheme was much too large, and was estimated on figures of consumption which might prove to be entirely fallacious in the future. The Council, he contended, were trading on the future; and if events proved different from those on which the calculations were based, the scheme would become a burden on the gas consumers.

Others of the objectors opposed the scheme on the ground of alleged excessive cost, or on pleas of interference with the amenities of their property by the erection of a vertical retort house, 70 ft. high, in place of the present lower structure.

The inquiry was closed.

TRADE NOTES.

Bamag-Meguin (Great Britain), Ltd.

A most interesting little booklet has been published by Bamag-Meguin (Great Britain), Ltd., describing, and illustrating by excellent photographs, the various apparatus supplied by them to a considerable number of Continental gas-works. The Company manufacture every kind of appliance used in a gas-making plant, together with many other kinds of engineering machinery.

Two-Tone Gas Fire Finishes.

Messrs. R. & A. Main, Ltd., have published an attractively illustrated booklet dealing with their most recent productions in gas fires—the "Baronial" series. These fires set a new standard in design and finish, and are appliances worthy of the finest settings. The fenders are cast in solid brass, copper, and pewter, and the canopies are of art metal to match. The frames are of cast iron, obtainable either stove enamelled or black porcelain enamelled, as desired. A special feature of the "Baronial" designs is that each of the four fenders is interchangeable with any of the six fires in the series. There is thus a variety of twenty-four different combinations to choose from, each obtainable in 7 and 9 radiant sizes. The choice of brass, pewter, or copper canopies and fenders adds to the comprehensiveness of the series.

"A Proud Inheritance."

Messrs. George Glover & Co., Ltd., of Chelsea—makers of the popular "Ranelagh" prepayment gas meter—have just issued a most interesting 20-page brochure entitled "A Proud Inheritance." This title is inspired by the fact that in 1860 Dr. George Glover (founder of the present Company) designed and constructed three sets of test gasholders which were officially reported upon by the Astronomer Royal as being "as perfect as human skill could make them." The maintenance of this high standard is the "proud inheritance" of those who are responsible for the conduct of the Company to-day. The brochure deals, briefly, with the progress of the Company since its inception in 1861, and in more detail with the new works which have been erected since the partial destruction, by fire, of the old building in May of last year. It takes one on a "conducted tour" through the various workshops in the factory in the order in which all meters pass in course of manufacture; and an interesting description is given of the various processes which contribute to the production of George Glover's meters. One is more readily able to visualize these operations by the numerous helpful illustrations contained in this attractive publication.

CONTRACTS OPEN.

Crude Tar.

The Milford Haven Urban District Council invite tenders for the purchase of crude tar. [See advert. on p. 419.]

Pipes.

The Middleton Corporation Gas Department are inviting tenders for the supply of 4-in. and 6-in. cast-iron main pipes. [See advert. on p. 419.]

"B.C.G.A." Essay Competition.—Kathleen Mary Shinton (15), formerly of Moor End Council School, Birmingham, and now a pupil of the "M.P." Commercial College, Edmund Street, as already noticed in the "JOURNAL," won the first prize (a scholarship of £50) in the "Fairy Gas" competition organized by the British Commercial Gas Association. On Oct. 31 the winner was presented with her prize, at the Technical College, Suffolk Street, by Councillor W. Byng Kenrick (Lord Mayor-Elect of Birmingham), who also handed local and national awards to many other children, in connection with the same competition. Alderman J. H. Lloyd (Chairman of the Gas Committee), who presided, congratulated Miss Shinton upon winning the national scholarship of £50, to which sum the Gas Committee had added £25. That was the second time a Birmingham girl had been successful in winning the scholarship. Councillor Kenrick, who is Chairman of the Birmingham Education Committee, remarked that if there were more competitions of this kind the time-table of the schools might be greatly upset, and the Board of Education might not be willing to pay for encouraging the advertising of gas and other things.

COAL TRADE REPORTS.

From Our Own Correspondents.

NORTH-EAST COAST.

There has been little change in the general situation. Continued scarcity of boats, combined with an absence of demand, is making the position in Durham very difficult. Some of the better-class gas coal collieries have reported a slight inprovement, but others, as well as coking and steam coal producers, have experienced as bad a week as any since the strike. Northumberland screened steams continue in good demand; but difficulties are now being experienced in disposing of the smalls, and progress is somewhat impeded.

Discussions are proceeding in Durham on the question of a county selling scheme, which it is generally anticipated would involve a regulation of output and a fixing of minimum prices. Owing to the great variety of the Durham output, there are considerable difficulties in the necessary classification. If any scheme can be evolved, it is regarded only as a preliminary to a general understanding with other districts which are already organized.

Quotations show little or no change. Wear Special gas makes are 15s. f.o.b., best qualities ask 14s. 9d., and other sorts 13s. to 13s. 3d. Coking coal has been weak at 13s. to 13s. 3d., and second-class bunkers are freely offered round 13s. Best bunkers are slightly firmer at 13s. 9d. Northumberland best screened steams ask 14s., as compared with the "agreed" minimum price of 13s. 6d.

Gas coke has suffered from lack of tonnage, and whereas makers are fairly firm supplies are offering through contractors at 19s. 6d. f.o.b. for shipment.

YORKSHIRE AND LANCASHIRE.

Gas coals in Yorkshire and Lancashire are easy under contract, and any extra deliveries required are subject to mutual arrangement.

Industrial fuels are rather spasmodic, consumers, generally speaking, not requiring the tonnages anticipated. As a result, all descriptions of steam raising coal have declined in value. Slacks are a little easier; but furnace coke is in request at recent figures.

The export section is at the moment chiefly concerned with bunker coal, and with the increase of 5 p.ct. in the quota quantity of the collieries under the Five-Counties Scheme some relief may be expected in this direction. South Yorkshire hards and washed trebles are the chief difficulty, these not having been obtainable in the past week.

The demand for secondary grades of domestic coal has decreased; but there is a better request for the higher-priced fuel, and in some instances there is delay in the delivery of the latter qualities.

The following are the Humber bunker and export prices, f.o.b. usual shipping ports:

South Yorkshire—Hards, Association, bunkers 20s. to 20s. 6d., export 16s. to 16s. 6d.; screened gas coal, export 15s. 6d. to 16s.; washed trebles, 15s. 6d. to 16s.; washed doubles, 15s. to 15s. 3d.; washed singles, 13s. 9d. to 14s.; washed smalls, bunkers 14s. 3d. to 14s. 6d., export 10s. 6d. to 11s.; smithy peas, export 16s. 6d. to 17s. 6d. per ton.

West Yorkshire—Hartley's (f.o.b. Goole), bunkers 16s. 6d. to 17s. 6d., export 14s. to 15s.; screened gas coal, export 14s. to 15s.; washed trebles, 15s. 6d. to 16s.; washed doubles, 13s. 6d. to 14s.; washed singles, 13s. to 13s. 3d.; washed smalls, bunkers 14s. 6d. to 15s., export 10s. to 10s. 6d.; unwashed trebles, export 14s. 6d.; unwashed doubles, 11s. 6d. to 12s.; rough slack, 8s. 9d. to 9s. 3d.; coking smalls, 8s. 6d. to 9s. 6d. per ton.

Derbyshire and Nottinghamshire—Top hards, bunkers 19d. 6d. to 20s., export 15s. 6d. to 16s. 6d.; cobbles, export 15s. 6d. to 16s. 6d.; washed trebles, 15s. 6d. to 16s.; washed doubles, 12s. to 13s. 3d.; rough slack, 8s. 9d. to 9s. 3d.; coking smalls, bunkers 14s. 3d. to 14s. 6d., export 10s. 6d.; unwashed doubles, export 11s. to 11s. 6d.; rough slack, bunkers 12s. 6d. to 13s., export 8s. to 9s. per ton.

Yorkshire, Derbyshire, and Nottinghamshire—Screened steam coal, bunkers 17s. to 18s., export 13s.; gas coke, export 21s. to 22s. 6d.; furnace coke 19s. to 19s. 6d.; washed steam, Goole, West Riding, bunkers 16s. to 16s. 6d.; Hull, West Riding, 17s. 9d.; Hull, South Yorks., 17s. 9d. to 18s., export 14s. 6d. to 15s. per ton.

MIDLANDS.

November weather is giving some stimulus to the sale of house coals. It goes only a very little way, however, towards rescuing the market from the demoralization into which it has fallen. The highest grades of household coal are called for faster than they are being produced. This is one of the inevitable consequences of the restriction scheme.

There is a superabundance of most of the other classes of coal. In many cases sales are being made at the lowest prices ruling in September. London is taking less coal than usual from Cannock Chase and Warwickshire pits. Notice has been issued of the decision to close down a Leicestershire mine, the management stating that the loss has become too heavy to be borne. Though work is very irregular at all but a few specially favoured pits outside the combine, stocks at collieries are increasing.

Rough slacks are offered in spot lots at about 5s. 6d. In cases where the production is heavy, as at pits which are working full time, or nearly full time, accumulations are being got rid of at even greater loss. Those collieries which have a regular market for the rest of their output can get some indemnification for the deficit on slacks. For the majority, however, the whole range of prices is uneconomic.

Wateringbury Gas Company, Ltd.—The Wateringbury (Kent) Gas Company has been registered as a public Company to enter into an agreement with Messrs. Frederick Leney & Sons, Ltd., for the acquisition of the business of manufacturers, producers, and sellers of gas and residual products as formerly carried on by them at Wateringbury.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Nov.* 5.

There is nothing of special interest to report in the London tar products market, values generally being as follows:

Pitch, about 40s. to 42s. 6d. per ton.
Creosote, about 7d. per gallon.
Pure benzole, about 1s. 8d. per gallon.
Solvent naphtha, 95/160, about 1s. 6d. per gallon.
Pure toluole, 1s. 11d. to 2s. per gallon.
Pyridine, about 5s. per gallon.

Tar Products in the Provinces.

Nov. 5.

The market for pitch has been quiet and steady throughout the past week. There seems to be a rather firmer tone, and manufacturers generally appear to be quite willing to wait before selling any further quantity. Offers have been made by consumers at 40s., which have been refused.

Creosote is quiet; but the market is steady, and shipments are steadily proceeding.

Water-white products are firm; but there is still a good demand for benzole and rather more inquiry for solvent naphtha, although as regards the latter buyers are not willing to pay the prices asked by manufacturers.

Crude carbolic is steady.

Crystals carbolic are quiet, with not much business doing.

Cresylic is dull, and all but the very best qualities are difficult to sell.

The average prices of gas-works products during the week were: Gas-works tar, 31s. to 36s. Pitch—East Coast, 40s. to 42s. 6d. f.o.b. West Coast—Manchester, 35s. to 36s.; Liverpool, 37s. to 38s.; Clyde, 37s. to 38s.. Toluole, naked, North, 1s. 5d. to 1s. 6d. nominal. Coal-tar crude naphtha, in bulk, North, 9d. to 10d. Solvent naphtha, naked, North, 1s. 1¼d. to 1s. 2d. Heavy naphtha, North, 1s. to 1s. 0½d. Creosote, in bulk, North, liquid, 5¾d. to 6d.; salty, 5½d. to 5¾d.; Scotland, 5¾d. to 5¾d. Heavy oils, in bulk, North, 8¼d. to 8½d. Carbolic acid, 60 p.ct., 1s. 11d. to 2s. prompt. Naphthalene, £13 to £15; salts, £5 to £5 10s., bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

Benzole Prices.

The following are considered to be the market price to-day:

	s. d.		s. d.	
Crude benzole . . .	0 10	to	0 10½	per gallon at works
Motor ,, . . .	1 4	,,	1 4½	,, ,, ,,
90 p.ct. ,, . . .	1 7	,,	1 8	,, ,, ,,
Pure ,, . . .	1 10	,,	1 11	,, ,, ,,

A Million Gallons of Tar.—The Down County Council have made an agreement with the Belfast Corporation to purchase from the municipal gas-works all the tar required for road-making, the quantity amounting to about one million gallons.

Sheppy Gas Company.—The tenders for the £10,000 6 p.ct. preference stock, which was offered by Messrs. A. & W. Richards, of 37, Walbrook, E.C. 4, on behalf of the Directors of the Sheppy Gas Company, were opened on Oct. 31. The issue was considerably oversubscribed at prices ranging from £105 down to the minimum of par.

Illingworth Plant for Allerton Colliery.—During the past few months Messrs. Pease & Partners, in conjunction with Messrs. T. & R. W. Bower, a subsidiary of the former, have carried out exhaustive tests with Allerton Main coal on the plant of the Illingworth Carbonization Company at Pontypridd, South Wales. The outcome is the decision of Messrs. Bower to proceed immediately with the installation of a 250-ton per day Illingworth plant at the Allerton Main Colliery, near Leeds.

Brownhills Tenants Want Gas.—Owing to the high price of electricity for domestic purposes prevailing in the Brownhills district, many tenants have been organizing a petition to obtain gas. Of the population in this district, 90 p.ct. use electricity supplied by the electricity department of the Cannock Chase Colliery, whose charges do not compare favourably with those in Birmingham, Wolverhampton, or Cannock. The Colliery admit that they only make electricity as a side-line, on which they expect to make a profit of 5 p.ct. on the capital.

Frauds on Gas Company.—On Oct. 30, at the Sheffield Police Court, Charles William Hamby, a clerk of 23 years' service with the Sheffield Gas Company, was sentenced to six months' imprisonment for stealing from his employers various sums of money totalling £11. Mr. Hamby had been a counter clerk, and because of his long service was looked upon with a great degree of trust. The frauds had been going on for about five years, and had been committed in a very ingenious way. In addition to the loss of his employment, it was stated that he would lose something over £100 through the Company's co-partnership scheme.

New Low-Temperature Carbonizing Plant for South Wales.—A low-temperature carbonization plant, capable of treating 500 tons of coal per day, is to be erected by Motor Fuel Proprietary, Ltd., for Meiros Collieries, Ltd., of South Wales. It is announced that Mr. H. H. Merrett, Managing Director of Messrs. Guret, Llewellyn, & Merrett, the coal distributing company of Cardiff, is a member of the board, and Lieut.-Col. F. I. L. Ditmas, who was Chairman of the Upper Silesia Coal Commission, and Technical Investigator to the Mining Association of Great Britain, has joined the Company in connection with the technical management.

STOCK MARKET REPORT.

THERE were very few features of interest on the Stock Exchange last week, beyond the continued fall of Speculative Industrials.

Gilt-edged stocks held their own fairly well in spite of the dulness prevailing. Among the new issues a large proportion of the City of Sydney loan was left with the underwriters, and dealings were at a slight discount. Foreign stocks were inactive, and there were few transactions of importance.

In the Gas Market business was brisk. The feature of the week was a rise of 7 points in the North Middlesex 6 p.ct. consolidated. Having regard to the last dividend paid (£7 1s. p.ct. per annum), the rise to 102-107 is fully justified, and it is only owing to the comparatively few transactions that the quotation is not higher. The rise of 3 points in Maidstone 5 p.ct. to 115-120 is also justified. There were two downward movements during the week. Gas Light ordinary was marked down 6d. to 18s. 7½d.-19s. 1½d., and the average value now is below that at which the stock was quoted prior to the change to the quotation per £1 stock. Primitiva ordinary dropped 1s. to 24s.-26s.; and in the absence of any dividend distribution would still appear to be over-valued.

The following transactions were recorded during the week:

On Monday, Alliance and Dublin 97, Bournemouth "B" 12⅜, 6 p.ct. pref. 11⅛, 11¼, Colonial 24s. 9d., Continental Union 39½, 7 p.ct. pref. 93¼, Croydon sliding-scale 111½, 112, Gas Light and Coke 19s., 19s. 1½d., 19s. 3d., 4 p.ct. pref. 77½, Imperial Continental 172½, 173, 174½, Montevideo 98, Primitiva 25s., 25s. 3d., 25s. 7½d., South Metropolitan 107½, 107⅝, 108¼, 3 p.ct. deb. 59½, Southampton 5 p.ct. 78¾. Supplementary prices, Gas Light and Coke 5 p.ct. deb. 101⅛, Liverpool 5 p.ct. 91½, Metropolitan (of Melbourne) 9⅛.

On Tuesday, Barnet 7 p.ct. max. 115¼, Bombay 21s., Bournemouth 6 p.ct. pref. 11⅛, 11¼, Commercial 99½, 100¼, Continental Union 38¾, European 8½, Gas Light and Coke 18s. 10½d., 19s., 19s. 1½d., 19s. 3d., 3½ p.ct. max. 63¼, 63½, 3 p.ct. deb. 61½, Imperial Continental 173, Primitiva 24s. 9d., South Metropolitan 108, 6½ p.ct. deb. 101½, 102, South Suburban 5 p.ct. 110, 5 p.ct. deb. 100, Southampton 5 p.ct. max. 78¾, Swansea 7 p.ct. pref. 102⅝. Supplementary prices, Liverpool 5 p.ct. 90½.

On Wednesday, Alliance and Dublin 97½, Bombay 21s. 6d., Bournemouth 5 p.ct. 13, 13⅛, 7 p.ct. 12⅜, British 7 p.ct. pref. 115, 4 p.ct. deb. 75, Commercial 99½, Croydon sliding-scale 111½, European 8 1/16, 8 3/16, Gas Light and Coke 18s. 9d., 18s. 10½d., 19s., 19s. 1½d., 19s. 3d., 4 p.ct. pref. 77, 77½, 77¾, Imperial Continental 174, 3½ p.ct. deb. 69, Malta and Mediterranean 5⅝, 5¾, Montevideo 97, 98, North Middlesex 6 p.ct., 104½, 105, 105½, Oriental 116, 117, Ottoman 5s. 6d., 5s. 9d., 6s., Primitiva 24s. 3d., 24s. 6d., 24s. 9d., 25s., South Metropolitan 107, 107½, 3 p.ct. deb. 60, 60¼, 60½, South Suburban 5 p.ct. 109, 5 p.ct. deb. 98, Swansea 6½ p.ct. deb. 101⅞, 102¼, Tottenham "B" 101½. Supplementary prices, Gas Light and Coke 5 p.ct. deb. 1952-57 101¾. [Oxford 5 p.ct. deb. Correction from Official List. In the list of transactions for Wednesday, Oct. 24, the business done should not have been marked 87½], Rochester, Chatham 88, South Suburban new 5 p.ct. 110, new 5 p.ct. deb. 100.

On Friday, Alliance and Dublin 97½, 98½, Bombay 21s. 6d., 21s. 9d., Bournemouth 5 p.ct. 13, "B" 12⅜, 6 p.ct. pref. 11⅛, Brighton and Hove 6 p.ct. 116, 117, 5 p.ct. 103, 104, British 115, 115¼, 116, Commercial 100⅜, Gas Light and Coke 18s. 4½d., 18s. 7½d., 18s. 9d., 18s. 10½d., 19s., 4 p.ct. pref. 77, 78, 3 p.ct. deb. 61, Imperial Continental 173, 173½, 3½ p.ct. deb. 68½, Oriental 116, Primitiva 24s. 6d., 24s. 7½d., 24s. 9d., South African 5 1/16, South Metropolitan 107¼, 107½, 108, 6 p.ct. pref. 111½, South Suburban 5 p.ct. 110, 5 p.ct. deb. 100, Tottenham "B" 100, 100¾, 101, 101½, Wandsworth "C" 100¼, 100⅜. Supplementary prices, British, Norwich 3 p.ct. deb. 57, Danish 7⅜, Gas Light and Coke 5 p.ct. deb. 101⅜, Liverpool 5 p.ct. 90½, Mid-Kent 75s., 77s. 6d., Pinner 5¼ p.ct. deb. 100½, 101, South Suburban new 5 p.ct. 110, new 5 p.ct. deb. 100.

Money was in abundant supply at the end of the week, and the rate for old and new day-to-day loans quickly declined from 3½ p.ct. to as low as 2½ p.ct. As was expected, the new Treasury Bills were allotted at a lower rate. Over 50 millions were applied for, and 40 millions were allotted at an average rate of £4 7s. 5·84d. p.ct., about 7·4d. p.ct. below the average for the previous week. The discount market, under the influence of cheap money, was again active; purchases of November-December bills being made at as low as 4⅛ p.ct.

Both the New York and German exchanges were steady; the former closing at 4.84⅞, and the latter at 20.35⅝. French francs were lower at 124.09½; Italian lire were more favourable to that country at 92.58½; but pesetas were higher at 30.06. Belgas were unchanged at 34.89; and Dutch florins were finally quoted at 12.09.

Silver was in demand on both Indian and China account, and the cash price rose to 26¾d. per oz. With no Gold available, the price remained at 84s. 11½d. per oz.

The Bank rate is 4½ p.ct., to which it was reduced from 5 p.ct. on April 21, 1927. The Banks' deposit rate is 2½ p.ct., and the deposit rates of the discount houses are 2½ p.ct. at call and 2¾ p.ct. at notice.

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf.Yr	Dividends. Last Hf. Yr.	NAME.	Quotations. Nov. 2.	Rise or Fall on Week.	Transactions Lowest and Highest Prices.
£			% p.a.	% p.a.				
171,978	Stk.	Aug. 30	5	5	Aldershot 5 p.c. max. C.	72—77	..	..
412,992	,,	,,	4	4	Do. 4 p.c. Pref.	68—71	..	..
1,551,868	,,	Sept. 27	7	7	Alliance & Dublin Ord.	95—98	..	..
374,000	,,	July 12	4	4	Do. 4 p.c. Deb.	63—66	..	97—98½
532,654	,,	Aug. 30	7	7	Barnet Ord. 7 p.c.	114—117	..	..
900,000	1	Oct. 11	1/7½	1/4½	Bombay, Ltd.	20/—22/-	..	115¼
170,000	10	Aug. 30	8½	8½	Bournemouth 5 p.c.	12½—13½	..	21/—21/9
500,050	10	,,	7	7	Do. B 7 p.c.	12¾—13⅜	..	13—13⅛
375,000	10	,,	6	6	Do. Pref. 6 p.c.	10⅞—11⅜	..	12⅜
50,000	Stk.	July 12	3	3	Do. 5 p.c. Deb.	56—59	..	11—11½
162,025	,,	,,	4	4	Do. 4 p.c. Deb.	75—78	..	..
357,900	,,	Aug. 30	7½	7½	Brighton & Hove 6 p.c. Con.	115—118	..	..
341,880	,,	,,	6½	6½	Do. 5 p.c. Con.	101—104	..	116—117
1,287,500	,,	July 26	5	5	Bristol 5 p.c. max.	90½—91½a	..	103—104
885,000	,,	Sept. 27	7	8	British Ord.	114—117	..	..
100,000	,,	June 28	7	7	Do. 7 p.c. Pref.	114—117	..	115—116
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb.	74—77	..	115
200,000	,,	,,	5	5	Do. 5 p.c. Red. Deb.	95—98	..	76
180,000	10	May 24	6	8	Cape Town, Ltd.	8—9	..	..
100,000	10	Oct. 25	4½	4½	Do. 4½ p.c. Pref.	6⅞—7¼*	..	..
150,000	Stk.	June 28	4½	4½	Do. 4½ p.c. Deb.	78—78	..	..
628,860	,,	July 26	6	6	Cardiff Con. Ord.	96—99	..	..
237,860	,,	June 28	7¼	7½	Do. 7½ p.c. Red. Deb.	100—103	..	..
157,150	,,	Aug. 16	6½	5	Chester 5 p.c. Ord.	88—93b	..	..
79,185	1	Oct. 11	1½/-	1/-	Colombo Ltd. Ord.	36/—38/-	..	..
24,495	1	,,	1/4⅛	1/4⅛	Do. 7 p.c. Pref.	20/6—22/6	..	..
375,402	1	Oct. 11	1/9½	1/9½	Colonial Gas Assn. Ld. Ord.	23/—25/-	..	..
187,848	1	,,	1/7½	1/7½	Do. 8 p.c. Pref.	21/—23/-	..	24/9
2,073,280	Stk.	July 26	7	5	Commercial Ord.	98—101	..	..
475,000	,,	June 14	8	8	Do 8 p.c. Deb.	57—60	..	99½—100⅜
300,000	,,	Sept. 27	11	11	Continental Union, Ltd.	86—41	..	..
787,560	,,	,,	7	7	Do. 7 p.c. Pref.	90—95	..	38⅜—39½
403,100	,,	Aug. 16	7	7	Croydon sliding scale	110—113	+1	93¼
492,370	,,	,,	5	5	Do. max. div.	84—87	..	111¼—112
55,000	,,	Aug. 16	10	7	Derby Con.	115—120c	..	..
399,000	,,	June 28	4	4	Do. Deb.	71—73c	..	..
1,002,180	,,	Aug. 30	5	5	East Hull Ord. 5 p.c.	8—9	..	..
18,708,480	10	Sept. 13	16	14	European, Ltd.	75—78	..	..
2,600,000	Stk.	July 26	5/1/1	5½	Gas Light & Coke 4 p.c. Ord.	18/7½—19/1½f	-/6	8 1/16—8½
4,187,020	,,	,,	8½	8¼	Do. 8½ p.c. max.	62—64	..	18/4½—19/3
5,602,620	,,	June 14	4	4	Do. 4 p.c. Con. Pref.	77—80	..	63½—63¾
1,181,315	,,	,,	8	8	Do. 5 p.c. Con. Deb.	60½—62½	..	77—78
1,642,770	,,	,,	6	6	Do. 5 p.c. Br'tf'd Rd. Db.	103—106	-½	61—61½
42,000	,,	,,	5	5	Do. 5 p.c. Red. Deb.	99—101	..	..
62,500	,,	—	7½	7½	Do. 7½ p.c. Ilford Deb.	..	..	..
268,740	,,	Aug. 30	6½	7	Hastings & St L. 5 p.c. Conv	95—100	..	..
70,000	,,	,,	5½	5½	Do. 5½ p.c. Conv.	75—80	..	..
173,200	10	Oct. 11	110	110	Hongkong & China, Ltd.	18—14	..	..
1,976,000	Stk.	Aug. 30	5	5½	Hornsey Con. 5½ p.c.	85—87	..	..
233,130	,,	May 24	10	10	Imperial Continental Cap.	172—177	..	..
235,242	,,	Aug. 16	8½	8½	Do. 8½ p.c. Red. Deb.	67—69	..	173¼—174
2,145,907	,,	Aug. 16	7	7½	Lea Bridge 5 p.c. Ord.	98—101	..	8¼—69
600,000	,,	Sept 27	7	5½	Liverpool 5 p.c. Ord.	90—91b	..	..
165,786	,,	Aug. 16	8	7	Do. 7 p.c. Red. Pref.	102½—103½b	..	..
63,480	,,	June 14	8	9	Maidstone 5 p.c. Cap.	115—120	+3	..
75,000	5	June 14	3	3	Do. 5 p.c. Deb.	55—58	..	..
541,920	Stk.	May 24	18	18	Malta & Mediterranean	5½—6	..	..
3,061,315	,,	Aug. 16	17	17	Montevideo, Ltd.	96—98	..	5½—5¾
860,929	,,	,,	5	5	Newcastle & Gateshead Con.	16/3—16/9d	+·/1½	97—98
691,705	,,	June 28	4	4	Do. 4 p.c. Pref.	71½—72¼d	..	..
131,780	,,	Aug. 30	8½	8½	Do. 8½ p.c. Deb.	69½—70½	..	..
800,000	,,	Apl. 26	6/18/0	7/1/0	North Middlesex 6 p.c. Con.	102—107	+7	..
188,120	,,	June 28	9	7	Oriental, Ltd.	115—118	..	104½—105½
414,500	,,	Aug. 30	7½	7½	Plym'th & Ston'house 5 p.c.	110—113	..	116—117
236,782	,,	,,	7½	7½	Portsm'th Con. Stk. 4 p.c. Std.	101—104	+2	..
2,334,464	1	,,	5	5	Do. 5 p.c. max.	79—82	..	..
244,500	100	—	—	—	Primitiva Ord.	24/—26/-	-1/-	24/3—25/7½
595,000	Stk.	June 1	4	4	Do. 4 p.c. Red. Deb.	91—94	..	..
416,345	,,	July 26	4	4	Do. 4 p.c. Red. Deb. 1911	78—80	..	..
150,000	10	June 28	4	4	Do. 4 p.c. Cons. Deb.	78—80	..	..
270,000	Stk.	Sept. 27	6	6	San Paulo 8 p.c. Pref.	8¼—8⅝	..	..
419,968	,,	Aug. 30	6	6½	Sheffield A	108¼—104¼e	..	..
1,047,000	,,	,,	6	6½	Do. B	103¼—104¼e	..	..
90,000	10	,,	6	6½	Do. C	103¼—104¼e	..	..
6,609,895	Stk.	June 14	13	14	South African	4—6	..	..
500,000	,,	July 26	7½	5	South Met. Ord.	107—109	..	5 1/16
1,895,445	,,	,,	6	6	Do. 6 p.c. Irred. Pf.	110—113	..	107—108¼
781,000	,,	Sept. 13	8	8	Do. 3 p.c. Deb.	59—61	..	111⅛
91,500	,,	Aug. 16	6¼	6¼	Do. 6½ p.c. Red. Db.	100—102	..	59¼—60¼
1,243,795	,,	July 26	8½	8½	South Shields Con.	108—110d	..	101½—102
868,887	,,	June 28	6¼	6¼	South Suburban Ord. 5 p.c.	108—111	..	..
647,740	,,	Aug. 30	5	5	Do. 5 p.c. Deb.	98—101	..	109—110
121,275	,,	June 28	4	4	South'mpton Ord. 5 p.c. max.	77—79	..	98—100
260,000	,,	Aug. 30	7	7	Do. 4 p.c. Deb.	72—75	..	78½
300,000	,,	June 28	6½	6½	Swansea 7 p.c. Red. Pref.	101—103	..	..
120,000	,,	July 26	7½	8	Do. 6½ p.c. Red. Deb.	101—103	..	102⅝
885,275	,,	,,	6½	6½	Tottenham District A 5 p.c.	117—122	..	101¾—102¼
150,000	,,	,,	6¼	5½	Do. B 5½ p.c.	99—102	..	..
191,355	,,	June 14	4	4	Do. 5½ p.c. Pref.	96—99	..	100—101½
239,094	,,	Aug. 30	6 5/16	6¼	Do. 4 p.c. Deb.	76—79	..	..
66,230	,,	,,	5	5	Uxbridge, Maidenhead, & Wycombe 5 p.c.	90—95	..	..
80,000	,,	July 12	8½	8¾	Do. 5 p.c. pref.	87—92	..	..
250,036	,,	,,	7	7½	Wandsworth, Wimbledon, and Epsom—			
432,535	,,	,,	5/19/0	6¼	Wandsworth A 5 p.c.	130—135	..	..
352,000	,,	,,	6⅜	6¾	Do. B 5½ p.c.	112—117	..	..
95,000	,,	,,	7½	7⅝	Do. C and New	98—103	..	..
200,000	,,	,,	5	5	Do. Wimbledon 6 p.c.	107—112	..	100½—100⅝
89,416	,,	,,	8	8	Do. Epsom 5 p.c.	115—120	..	..
284,743	,,	June 28	4	4	Do. 5 p.c. Pref	88—91	..	..
207,500	,,	,,		5	Do. 3 p.c. Deb.	56—59	..	..
					Do. 4 p.c. Deb.	75—78	..	..
					Do. 5 p.c. Deb.	98—100	..	..

Quotations at:—a.—Bristol. b.—Liverpool. c.—Nottingham. d.—Newcastle. e.—Sheffield. f.—The quotation is per £1 of Stock. * Ex. div. † Paid free of income-tax. ‡ For year.

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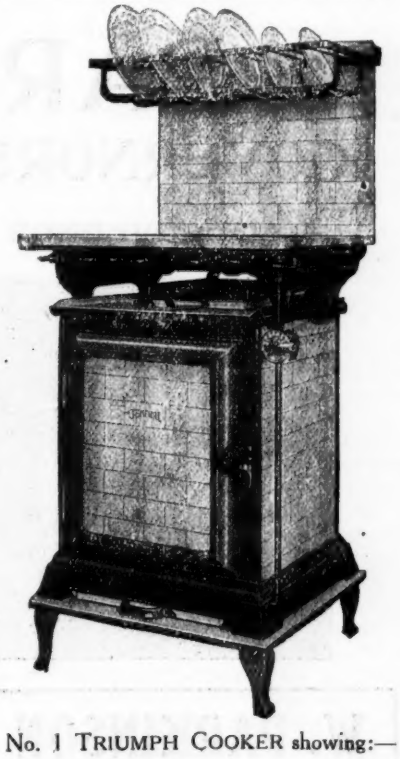

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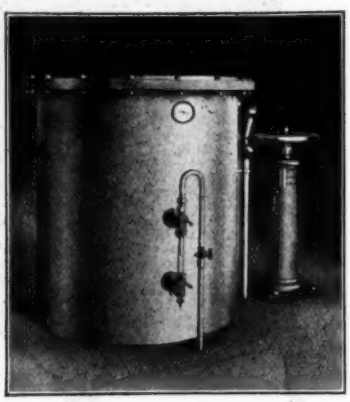

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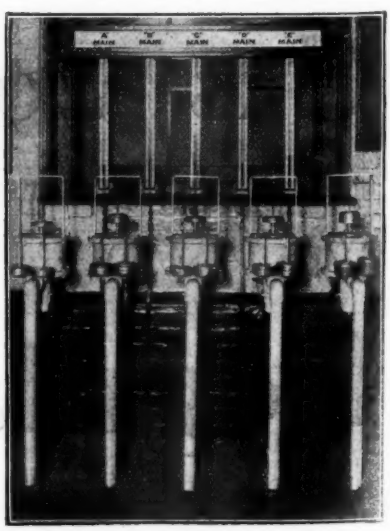

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